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VOL VII F



INTERACTIONAL AERODYNAMICS OF THE SINGLE
ROTOR HELICOPTER CONFIGURATION

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VOLUME VII-E - Frequency Analyses of Wake Split Film
Data, Air Ejectors

LEVEL III

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Prepared for

APPLIED TECHNOLOGY LABORATORY

U. S. ARMY RESEARCH AND TECHNOLOGY LABORATORIES (AVRADCOM)

Fort Eustis, Va. 23604

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APPLIED TECHNOLOGY LABORATORY POSITION STATEMENT

In 1975 a wind tunnel test program was conducted in the Boeing-Vertol 20-foot V/STOL Wind Tunnel on a 1/5th-scale UTTAS model to investigate and find solutions for several aerodynamic problems encountered during the UTTAS flight-testing. Specifically, these tests focused upon (a) the structure of the hub/rotor wake in the vicinity of the empennage, (b) the formulation of the ground vortex and its relation to hub loads and fuselage loads during transition, and (c) the occurrence of vibratory air pressures from the blade passing over the fuselage. Only portions of the above-mentioned wind tunnel test data were reduced and analyzed in addressing the flight-test problems of the UTTAS aircraft.

Under Contract DAAJ02-77-C-0020, Boeing-Vertol completed analyses on the data to understand more completely the aerodynamic interactions that are involved and to formulate instructions for the guidance of designers in these respects. The results of these studies are applicable to all existing and future single-rotor/tail rotor helicopters. The data have been segregated according to aerodynamic interactions and associated phenomena/problem areas. From this body of knowledge, a generalized set of design guidelines meaningful to the single-rotor helicopter design concept formulation were developed and are included in these reports.

Mr. Robert P. Smith of the Aeronautical Technology Division, Aeromechanics Technical Area, served as project engineer for this effort.

DISCLAIMERS

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PREFACE

The entire report describing the investigation of INTERACTIONAL AERODYNAMICS OF THE SINGLE-ROTOR HELICOPTER CONFIGURATION comprises eight numbered volumes bound as 33 separate documents. The complete list of these documents is as follows:

Volume I, Final Report

Volume II, Harmonic Analyses of Airframe Surface Pressure Data

- A - Runs 7-14, Forward Section
- B - Runs 7-14, Mid Section
- C - Runs 7-14, Aft Section
- D - Runs 15-22, Forward Section
- E - Runs 15-22, Mid Section
- F - Runs 15-22, Aft Section
- G - Runs 23-33, Forward Section
- H - Runs 23-33, Mid Section
- I - Runs 23-33, Aft Section

Volume III, Flow Angle and Velocity Wake Profiles in Low-Frequency Band

- A - Basic Investigations and Hubcap Variations
- B - Air Ejector Systems and Other Devices

Volume IV, One-Third Octave Band Spectrograms of Wake Split-Film Data

- A - Buildup to Baseline
- B - Basic Configuration Wake Explorations
- C - Solid Hubcaps
- D - Open Hubcaps
- E - Air Ejectors
- F - Air Ejectors With Hubcaps; Wings
- G - Fairings and Surface Devices

Volume V, Harmonic Analyses of Hub Wake

Volume VI, One-Third Octave Band Spectrograms of Wake Single Film Data

- A - Buildup to Baseline
- B - Basic Configuration Wake Exploration
- C - Hubcaps and Air Ejectors

Volume VII, Frequency Analyses of Wake Split-Film Data

- A - Buildup to Baseline
- B - Basic Configuration Wake Explorations
- C - Solid Hubcaps

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- D — Open Hubcaps
- E — Air Ejectors
- F — Air Ejectors With Hubcaps; Wings
- G — Fairings and Surface Devices

Volume VIII, Frequency Analyses of Wake Single Film Data

- A — Buildup to Baseline
- B — Basic Configuration Wake Exploration
- C — Hubcaps and Air Ejectors

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INTRODUCTION

Volume VII presents an array of machine plotted graphs of wake angle and velocity versus frequency in the band from 4 to 240 Hz derived from the split film transducers. This encompasses data in the spectrum through 10 times rotor speed which is 1433 RPM or 23.88 Hz.

The graphs showing wake frequency spectra are sequenced in the same order as the Outline of Wake Investigations (Table I). These graphs are distributed among Volumes VII-A through VII-G by the major categories of Table I in the following arrangement:

- Volume VII-A - Build-up to Baseline
- Volume VII-B - Basic Configuration
- Volume VII-C - Effect of Hub Caps Sections 1 & 2
- Volume VII-D - Effect of Hub Caps Sections 3 & 4
- Volume VII-E - Effect of Hub Caps Section 5 and
Effect of Air Ejectors
- Volume VII-F - Air Ejectors with Open Hub Caps and
Effect of Wings and Misc. Section 1
- Volume VII-G - Effect of Wings and Misc. Sections 2 & 3

The Table I outline and other material is included for reference and as context to the work of each sub-volume. Table 2, the List of Test Runs, arranges the runs in numerical order and gives pertinent text parameters.

The Index of Rake Positions, Table 3, lists the hot film transducer rake positions in the model coordinate system for each run and its test points. The main feature of Table 3 is the indexing of the test point number to the model water line station and butt line as it varied from run to run. The table groups the runs as they shared the indexing correspondence of point with position. It is emphasized that the runs in a group do not necessarily all share the same number of test points but they do have same correspondence within their respective ranges of test points.

The orientation of the rake is shown pictorially in Figures 1 through 6 for the various test runs. Figure 7 presents a scaled drawing of the model with reference to the three-axis coordinate system.

TABLE 1			
OUTLINE OF WAKE INVESTIGATIONS			
Description	Configuration Code	Run No.	Base-line
<u>Build-up to Baseline</u>			
1. Nacelles removed	$K_{13}+H_1-N$	149	150
2. Blades off, rotating hub	$K_{13}-M+H_{1.0}$	160	156
3. " " , non-rotating hub	$K_{13}-M+H_{1.0}$	158	156
4. " " , hub off	$K_{13}-M-H_{1.0}$	159	156
<u>Basic Configuration</u>			
<u>1. Wake Explorations near Empennage</u>			
(a) 15" Long. + traverse at T/R C.L.	K_{11}	111	---
(b) 9" Vert. + " above T/R "	"	112	---
(c) 2" " " in vortex	"	113	---
(d) 8" " " (continue 112)	"	114	---
(e) 13" " " behind stab.	"	115	---
(f) Lateral traverse, left stab. (One T.P. only)	"	116	---
(g) Same continued	"	117	---
(h) Same continued (One T.P. only)	"	118	---
(i) Lateral traverse right stab.	"	119	---
(j) T/R effect on wake	$K_{11}+T_2^0$	121	115
<u>2. Climb/Descent Studies</u>			
(a) Climb 900 FPM	K_{11}	135	---
(b) Descent 800 FPM	"	136	---
<u>Effect Of Hub Caps</u>			
<u>1. Solid Caps on Canister</u>			
(a) 7.6" diam. 2.17" ht. soft Pitch Arms	$K_{11}-H_{1.0}+H_{1.2}$	137	136
(b) 7.6" diam. 2.17" ht. stiff Pitch Arms	$K_{13}+H_{1.2}$	153	156
(b) 7.6" diam. 2.45" ht. flt. test config.	$K_{13}+H_{1.2.1}+I_1$ $+E_{1.0}$	207	188

TABLE 1 (CONTINUED)

OUTLINE OF WAKE INVESTIGATIONS

Description	Configuration Code*	Run No.	Base-line
<u>Effect of Hub Caps (Continued)</u>			
<u>2. Solid Caps Raised Above Canister</u>			
(a) 7.6" diam. 2.45" ht. 70" depth, .55 gap	$H_{1.2.2}+I_1+E_{1.0}$	208	188
(b) 10.0" diam. 3.25" ht. 1.55" depth, .50" gap	$H_{1.8.1}+I_1+E_{1.0}$	189	188
(c) 10.0" diam. 4.125" ht. 2.05" depth, .875" gap	$H_{1.8.2}+I_1+E_{1.0}$	190	188
(d) Repeat of 189	" " "	210	188
<u>3. Open Caps Without Underbody</u>			
(a) 10.0" diam. 1.25" gap, blades	$H_{1.0.2}+I_1+E_{1.0}$	193	188/166
(b) " " " gap, no blades	$H_{1.0.1}-M$	166	158
(c) " " 2.05" gap, blades	$H_{1.14.1}+I_1+E_{1.0}$	211	188
(d) " " 1.75" gap, no blades	$H_{1.0.1}-M$	165	158
(e) " " 1.87" gap, blades	$H_{1.0.3}+I_1+E_{1.0}$	191	188
(f) 16" diam. 2.00" gap, blades	$H_{1.7.1}$	168	156/167
(g) " " " gap, no blades	$H_{1.7.1}-M$	167	158
(h) " " 4.00" gap, blades	$H_{1.7.2}$	169	156
<u>4. Open Caps with Underbody</u>			
(a) 7.6" diam. 1.25" gap	$H_{1.11.1}+I_2+E_{1.0}$	194	188
(b) " " " "	$H_{1.11.1}+I_2+E_{4.0}$	198	188
(c) " " " " center post	$H_{1.11.2}+I_2$	202	194
(d) 10.0" diam. .5" gap, no blades	$H_{1.5.1}-M$	164	158
(e) " " 1.25" gap, no blades	$H_{1.5.2}-M$	161	158
(f) " " 2.0" gap, no blades	$H_{1.5.4}-M$	163	158
(g) " " 4.0" gap, no blades	$H_{1.5.3}-M$	162	158
(h) " " 1.25" gap	$H_{1.5.2}$	154	156/161
*Basic Code is K13.			

TABLE 1 (CONTINUED)			
OUTLINE OF WAKE INVESTIGATIONS			
Description	Configuration Code*	Run No.	Base-line
<u>5. Miscellaneous Hub Covers</u>			
(a) Hub fairing 16" diam.	H _{1.3}	151	150
(b) Wham-O-Frisbee 10" diam.	H _{1.9.0} +E _{1.2}	182	181
(c) Fab. glass Frisbee 16" diam.	H _{1.9.1} +E _{1.2}	183	181
<u>Effect of Air Ejectors</u>			
1. Basic system no blowing	H _{1.0} +E _{1.0}	172	156
2. " " 40 psi	" "	173	156/172
3. " " 150 psi	" "	174	156/172
4. Wide chord shroud 40 psi	H _{1.0} +E _{2.5.1}	175	156/173
5. Wide " " 150 psi	" "	176	156/174
6. W/C shroud w. lip 40 psi	H _{1.0} +E _{3.5.2}	184	156/173
7. Same Contoured Parallel 150 psi	H _{1.0} +E _{3.5.4}	187	156/174
8. Bifurcated duct 0 psi	H _{1.0} +E _{5.0}	203	156
9. " " 40 psi	" "	204	156/203
10. " " 150 psi	" "	205	156/203
<u>Air Ejectors with Open Hub Caps with Underbodies</u>			
1. 7.6" diam. 1.25" gap, 0 psi	H _{1.11.1} +I ₂ +E _{1.0}	194	188/172
2. " " " " 20 psi	" " "	195	188
3. " " " " 40 psi	" " "	196	188/173
4. " " " " 150 psi	" " "	197	188/174
5. " " " " 0 psi	H _{1.11.1} +I ₂ +E _{4.0}	198	188/194
6. " " " " 40 psi	" " "	199	188/196
7. " " " " 150 psi	" " "	200	188/196
8. Same with center post	H _{1.11.2} +I ₂ +E _{4.6}	201	188/200
9. 10.0" diam. 2.0" gap wide ch'd. shroud (150 psi)	H _{1.5.4} +E _{2.5.1}	177	156/176
<u>Effect of Wings and Misc.</u>			
1. Wings			
(a) Nacelle-mounted stub wing	H _{1.0} +W _{1.0} +E _{1.1}	178	181
(b) Single slotted flapped wing	H _{1.0} +W _{3.0} +E _{1.0}	180	181
(c) Double slotted flapped wing	H _{1.0} +W _{2.0} +E _{1.0}	179	181
(d) Boom-mounted stub wing	H _{1.0} +W _{4.0}	186	156
*Basic Code is K13.			

TABLE 1 (CONTINUED)

OUTLINE OF WAKE INVESTIGATIONS

Description	Configuration Code*	Run No.	Base-line
2. Crown Fairings			
(a) Flat top behind shaft	$K_{11}+D_1$	140	138
(b) Round top behind shaft	$K_{11}+D_2$	141	138
(c) Extended flat top fairing	H_1+D_4	170	156
(d) Flat top + 16" cap, 4" gap	$H_{1.7.2}+D_4$	171	170
(e) Forward fairing/nacelle fairing	$P_{1.0}$	152	156
3. Surface Devices			
(a) Vortex generators	$K_{11}+VG_{2.1}$	139	138
(b) Guidevane between nacelles	$K_{11}+FV_1$	142	138
(c) Longitudinal strakes	$H_{1.5.3}+S_4$	155	156
(d) 14% porosity spoiler	$K_{11}+X_1$	143	138
*Basic Code is K13 unless noted otherwise.			

TABLE 2
LIST OF TEST RUNS
BASIC INVESTIGATIONS OF THE HUB WAKE

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
111	K ₁₁ /15" Long. wake traverse at TR center line	80	1433/0	8	6.0	-2.0	∞	Off
112	" /9" Vert. wake traverse above TR center line	"	"	"	"	"	"	"
113	" /2" Vert traverse through MR vortex	"	"	"	"	"	"	"
114	" /8" Vert. traverse below TR center line	"	"	"	"	"	"	"
115	" /13" Vert. traverse behind stabilizer	"	"	"	"	"	"	"
116	" /Lateral traverse - left stabilizer	"	"	"	"	"	"	"
117	" /116 continued	"	"	"	"	"	"	"
118	" /116 continued	"	"	"	"	"	"	"
119	" /Lateral traverse - right stabilizer	"	"	"	"	"	"	"
121	K ₁₁ +T ₂ /Effect of tail rotor flow on wake	"	1433/4500	"	"	"	"	On
135	K ₁₁ /Wake in 900 fpm climb	"	"	"	-6.0	-4.5	"	Off
136	" /Wake in 800 fpm descent	"	"	"	6.0	-2.0	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
137	K ₁₁ -H _{1.0} +H _{1.2} /Effect of 7.6 inch diam. solid hub cap	80	1433/0	8	6	-3.8	∞	Off
138	K ₁₁ /Repeat of base run	"	"	"	"	"	"	"
139	K ₁₁ +VG _{2.1} /Effect of vortex generators on aft crown	"	"	"	"	"	"	"
140	K ₁₁ +D ₁ /Flat-topped "doghouse" fairing on aft crown	"	"	"	"	"	"	"
141	K ₁₁ +D ₂ /Rounded-top fairing	"	"	"	"	"	"	"
142	K ₁₁ +FV ₁ /Deflection vane on crown between nacelles	"	"	"	"	"	"	"
143	K ₁₁ +X ₁ /Variable porosity spoiler	"	"	"	"	"	"	"
149	K ₁₃ +H ₁ -N ₁ /Effect of nacelles off also add stiff pitch arms (K ₁₃)	60	1075/0	4.5	"	"	"	"
150	K ₁₃ +H ₁ /60 knot baseline	"	"	"	"	"	"	"
151	K ₁₃ +H _{1.3} /16 inch diam. helmet fairing	"	"	"	"	"	"	"
152	K ₁₃ +P _{1.0} /Pylon and intake fairings	80	1433/0	8	"	"	"	"
153	K ₁₃ +H _{1.2} /Repeat 137 with K ₁₃ pitch arms	"	"	"	"	"	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
154	K ₁₃ +H _{1.5.2} /10" open hub cap, 7" underbody, 1.25" gap	80	1433/0	8	6	-3.8	∞	Off
155	K ₁₃ +H _{1.5.2} +S ₄ /Same as 154 except strakes on aft crown	"	"	"	"	"	"	"
156	K ₁₃ +H _{1.0} /Baseline with K ₁₃ , i.e., stiff pitch arms	"	"	"	"	"	"	"
158	K ₁₃ -M+H _{1.0} /Wake studies with blades off, hub not rotating	"	0/0	"	"	"	"	"
159	K ₁₃ -M-H _{1.0} /Wake studies with hub off	"	"	"	"	"	"	"
160	K ₁₃ -M+H _{1.0} /Same as 158 except hub is rotating	"	1433/0	"	"	"	"	"
161	K ₁₃ -M+H _{1.5.2} /Repeat of 154 without blades	"	0/0	"	"	"	"	"
162	K ₁₃ -M+H _{1.5.3} /Same as 161 except 4" gap	"	"	"	"	"	"	"
163	K ₁₃ -M+H _{1.5.4} /Same as 161 except 2" gap	"	"	"	"	"	"	"
164	K ₁₃ -M+H _{1.5.1} /Same as 161 except 0.5" gap	"	"	"	"	"	"	"
165	K ₁₃ -M+H _{1.0.1} /10" open hub cap, no underbody, same cap vert. position as Run 154	"	"	"	"	"	"	"
166	K ₁₃ -M+H _{1.0.2} /Same as 165 with cap lowered by 0.5"	"	"	"	"	"	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
167	K ₁₃ -M+H _{1.7.1} /16" open cap, no underbody, 2" gap	80	0/0	8	6	-3.8	∞	Off
168	K ₁₃ +H _{1.7.1} /Blades on, same cap config. as 167	"	1433/0	"	"	"	"	"
169	K ₁₃ +H _{1.7.2} /16" open cap, no underbody, 4" gap	"	"	"	"	"	"	"
170	K ₁₃ +H _{1.0} +D _{4.0} /Extended flat top fairing on aft crown	"	"	"	"	"	"	"
171	K ₁₃ +H _{1.7.2} +D _{4.0} /Same fairing as 170 same cap as 169	"	"	"	"	"	"	"
172	K ₁₃ +H _{1.0} +E _{1.0} (0psi)/Basic air ejector zero blowing baseline	"	"	"	"	"	"	"
173	K ₁₃ +H _{1.0} +E _{1.0} (40 psi)/Same as 172 with 40 psi supply	"	"	"	"	"	"	"
174	K ₁₃ +H _{1.0} +E _{1.0} (150 psi)/Same as 172 with 150 psi supply	"	"	"	"	"	"	"
175	K ₁₃ +H _{1.0} +E _{2.5.1} (40 psi)/Ejector with wide chord shroud at 40 psi	"	"	"	"	"	"	"
176	K ₁₃ +H _{1.0} +E _{2.5.1} (150 psi)/Same as 174 with 150 psi supply	"	"	"	"	"	"	"
177	K ₁₃ +H _{1.5.4} +E _{2.5.1} (150 psi)/Same as 176 with 10" cap like 163	"	"	"	"	"	"	"
178	K ₁₃ +H _{1.0} +W _{1.0} +E _{1.1} (0 psi)/Nacelle mounted wing	"	"	"	"	"	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
179	K ₁₃ +H _{1.0} +W _{2.0} +E _{1.0} (0 psi)/Double slotted flapped wing	80	1433/0	8	6	-3.8	∞	Off
180	K ₁₃ +H _{1.0} +W _{3.0} +E _{1.0} (0 psi)/Single slotted flapped wing	"	"	"	"	"	"	"
181	K ₁₃ +H _{1.0} +E _{1.2} (0 psi)/Baseline with ejector tube moved aft	"	"	"	"	"	"	"
182	K ₁₃ +H _{1.9} +E _{1.2} (0 psi)/Standard 10" frisbee	"	"	"	"	"	"	"
183	K ₁₃ +H _{1.9} +E _{1.2} (0 psi)/16" fabricated frisbee	"	"	"	"	"	"	"
184	K ₁₃ +H _{1.0} +E _{3.5} .2 (40 psi)/Wide chord with lip at 40 psi	"	"	"	"	"	"	"
185	K ₁₃ +H _{1.0} +E _{3.5} .2 (150 psi)/Same as 184 with 150 psi air	"	"	"	"	"	"	"
186	K ₁₃ +H _{1.0} +W _{4.0} /Boom mounted stub wing	"	"	"	"	"	"	"
187	K ₁₃ +H _{1.0} +E _{3.5} .4 (150 psi)/Like 185 with modified shroud	"	"	"	"	"	"	"
188	K ₁₃ +H _{1.0} +I ₁ +E _{1.0} (0 psi)/Baseline with I ₁ instr. ring	"	"	"	"	"	"	"
189	K ₁₃ +H _{1.8} .1+I ₁ +E _{1.0} (0 psi)/Solid cap, 10" diam. 3.25" height	"	"	"	"	"	"	"
190	K ₁₃ +H _{1.8} .2+I ₁ +E _{1.0} (0 psi)/Same as 190 except + 4.12" height	"	"	"	"	"	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
191	K ₁₃ +H _{1.0.2} +I ₁ +E _{1.0} (0 psi)/10" cap, no underbody, 1.87" gap	80	1433/0	8	6	-3.8	∞	Off
193	K ₁₃ +H _{1.0.2} +I ₁ +E _{1.0} (0 psi)/10" cap, no underbody, 1.25" gap	"	"	"	"	"	"	"
194	K ₁₃ +H _{1.11.1} +I ₂ +E _{1.0} (0 psi)/7.6" cap, underbody, 1.25" gap	"	"	"	"	"	"	"
195	K ₁₃ +H _{1.11.1} +I ₂ +E _{1.0} (20 psi)/Same as 194 with 20 psi air	"	"	"	"	"	"	"
196	K ₁₃ +H _{1.11.1} +I ₂ +E _{1.0} (40 psi)/Same as 194 with 40 psi air	"	"	"	"	"	"	"
197	K ₁₃ +H _{1.11.1} +I ₂ +E _{1.0} (150 psi)/Same as 194 with 150 psi air	"	"	"	"	"	"	"
198	K ₁₃ +H _{1.11.1} +I ₂ +E _{4.0} (0 psi)/Same as 194 except blowing tube 2" aft	"	"	"	"	"	"	"
199	K ₁₃ +H _{1.11.1} +I ₂ +E _{4.0} (40 psi)/Same as 198 with 40 psi air	"	"	"	"	"	"	"
200	K ₁₃ +H _{1.11.1} +I ₂ +E _{4.0} (150 psi)/Same as 198 with 150 psi air	"	"	"	"	"	"	"
201	K ₁₃ +H _{1.11.2} +I ₂ +E _{4.0} (150 psi)/Same as 200 except center support cap	"	"	"	"	"	"	"
202	K ₁₃ +H _{1.11.2} +I ₂ /Baseline with I ₂ and no blowing tube	"	"	"	"	"	"	"
203	K ₁₃ +H _{1.0+E5.0} (0 psi)/Bifurcated air duct baseline	"	"	"	"	"	"	"

TABLE 2 (CONTINUED)
LIST OF TEST RUNS
EVALUATION OF WAKE-ALTERING DEVICES

RUN NO.	CONFIGURATION/CONDITION	VTUN KNOTS	RPM MR/TR	DISK LDG. psf	MODEL ANGLES		MR HT. h/d	TAIL ROTOR
					α°	ψ°		
204	K13+H1.0+E5.0 (150 psi)/Bifurcated duct with 150 psi air	80	1433/0	8	6	-3.8	∞	Off
205	K13+H1.0+E5.0 (40 psi)/Same as 204 with 40 psi air	"	"	"	"	"	"	"
207	K13+H1.2.1+I1+E1.0 (0 psi)/7.6" solid cap, no gap	"	"	"	"	"	"	"
208	K13+H1.2.2+I1+E1.0 (0 psi)/Same as 207 except 0.55" gap	"	"	"	"	"	"	"
210	K13+H1.15.1+I1+E1.0 (0 psi)/Repeat of 189	"	"	"	"	"	"	"
211	K13+H1.14.1+I1+E1.0 (0 psi)/Like 189 and 210 except cap is open	"	"	"	"	"	"	"

TABLE 3					
INDEX TO RAKE POSITIONS					
RUN NUMBER	TEST POINT	WATER LINE	MODEL STATION	BUTT LINE	LOCATION FIGURE
111	20	53.5	103.1	-7.25	1
	21	"	"	"	
	22	"	105.0	"	
	24	"	107.0	"	
	26	"	109.0	"	
	28	"	111.0	"	
	30	"	112.9	"	
	32	"	114.9	"	
	34	"	116.9	"	
	36	"	118.9	"	
112	2	48.9	107.3	-7.25	1
	4	50.8	"	"	
	6	52.7	103.3	"	
	8	54.5	"	"	
	10	56.2	"	"	
	12	57.2	"	"	
113	2	51.7	103.3	-3.25	1
	4	52.3	"	"	
	6	52.8	"	"	
	8	53.3	"	"	
	10	53.9	"	"	
	11	53.3	"	"	
114	2	44.5	103.0	-3.25	1
	4	46.4	"	"	
	6	48.2	"	"	
	8	50.0	"	"	
	10	51.9	"	"	
115	3	52.9	124.7	-3.25	1
	4	52.0	"	"	
	6	50.0	"	"	
	9	48.0	"	"	
	10	46.0	"	"	
	12	44.1	"	"	
	14	42.1	"	"	
	16	53.0	"	"	
	18	54.0	"	"	
	20	55.0	"	"	

TABLE 3 (CONTINUED)
INDEX TO RAKE POSITIONS

RUN NUMBER	TEST POINT	WATER LINE	MODEL STATION	BUTT LINE	LOCATION FIGURE
116	7	36.9	100.5	-17.5	1
117	2	37.6	100.5	-16.0	1
	4	"	"	-14.0	
	6	37.3	99.6	-12.0	
	8	"	"	-10.0	
	10	"	"	- 8.0	
118	2	37.6	100.5	- 6.0	1
119	2	37.3	99.6	+ 6.0	1
	5	"	"	8	
	8	"	"	10	
	9	"	"	"	
	14	"	"	14	
	16	"	"	16	
	20	51.5	102.5	17.5	
	25	52.3	101.7	-17.5	
121	3	62.9	129.0	+ 5.7	2
	4	53.5	"	"	
	6	50.1	"	"	
	8	46.0	"	"	
	10	42.1	"	"	
135	2	56.9	106.3	- 5.7	3
	4	54.5	"	"	
	6	52.5	"	"	
	8	50.5	"	"	
	10	48.5	"	"	
	12	46.5	"	"	
	14	44.5	"	"	
136	2	56.5	104.0	- 8.0	4
	4	54.5	"	"	
	6	52.5	"	"	
	8	50.6	"	"	
	10	48.5	"	"	
	12	46.5	"	"	
	14	44.5	"	"	
	17	37.1	"	"	
	18	39.0	"	"	
	19	41.0	"	"	

TABLE 3 (CONTINUED)
INDEX TO RAKE POSITIONS

RUN NUMBER	TEST POINT	WATER LINE	MODEL STATION	BUTT LINE	LOCATION FIGURE
137	3	38.7	98.4	- 8.0	5
	5	39.9	"	"	
	7	42.0	100.5	"	
	9	44.0	"	"	
	11	46.0	103.6	"	
	13	48.0	"	"	
	15	50.0	"	"	
	17	52.0	"	"	
	19	54.0	"	"	
138-41, 143	2	38.8	98.4	- 8.0	5
	3	40.0	"	"	
	4	42.0	100.5	"	
	5	44.0	"	"	
	6	46.0	103.6	"	
	7	48.0	"	"	
	8	50.0	"	"	
	9	52.0	"	"	
	10	54.0	"	"	
142	7	37.8	98.4	- 8.0	5
	8	"	"	"	
	9	40.2	"	"	
	10	42.0	100.5	"	
	11	44.0	"	"	
	12	46.0	103.6	"	
	13	48.0	"	"	
	14	50.0	"	"	
	15	52.0	"	"	
	16	54.0	"	"	
	17	56.8	"	"	

TABLE 3 (CONTINUED)					
INDEX TO RAKE POSITIONS					
RUN NUMBER	TEST POINT	WATER LINE	MODEL STATION	BUTT LINE	LOCATION FIGURE
149-151	2	38.8	98.5	- 8.0	5
	3	40.0	"	"	
	4	42.0	100.6	"	
	5	44.0	"	"	
	6	46.0	103.5	"	
	7	48.0	"	"	
	8	50.0	"	"	
	9	52.0	"	"	
	10	54.0	"	"	
152-6, 158	2	42.9	97.9	0.0	6
161-4, 166	3	44.9	"	"	
167, 169-71	4	46.9	100.6	"	
175, 177-9	5	48.9	"	"	
180, 182, 184	6	50.9	104.6	"	
186-8, 190	7	52.9	"	"	
191, 193, 194	8	54.9	"	"	
196, 198, 201	9	56.9	"	"	
204, 207, 208					
211					
159	1	54.9	104.6	0.0	6
	2	52.9	"	"	
	3	50.7	"	"	
	4	48.6	100.6	"	
	5	46.7	"	"	
160, 203	5	42.9	97.9	0.0	6
	6	44.9	"	"	
	7	46.9	100.6	"	
	8	48.9	"	"	
	9	50.9	104.6	"	
	10	52.9	"	"	
	11	54.9	"	"	
165	3	44.9	97.9	0.0	6
	4	42.9	"	"	
	5	46.9	100.6	"	
	6	48.9	"	"	
	7	50.9	104.6	"	
	8	52.9	"	"	

TABLE 3 (CONTINUED)
INDEX TO RAKE POSITIONS

RUN NUMBER	TEST POINT	WATER LINE	MODEL STATION	BUTT LINE	LOCATION FIGURE
168, 183	4	42.9	97.9	0.0	6
	5	44.9	"	"	
	6	46.9	100.6	"	
	7	48.9	"	"	
	8	50.9	104.6	"	
	9	52.9	"	"	
	10	54.9	"	"	
172	3	42.9	97.9	0.0	6
	4	44.9	"	"	
	6	44.9	"	"	
	7	46.9	100.6	"	
	8	48.9	"	"	
	9	50.9	104.6	"	
	10	52.9	"	"	
173,174,176 185,195,197 199,200,205 210	1	42.9	97.9	0.0	6
	2	44.9	"	"	
	3	46.9	100.6	"	
	4	48.9	"	"	
	5	50.9	104.6	"	
	6	52.9	"	"	
	7	54.9	"	"	
181	2	42.9	97.9	0.0	6
	3	44.9	"	"	
	4	46.9	100.6	"	
	5	48.9	"	"	
	6	50.9	104.6	"	
	7	52.9	"	"	
	9	54.9	"	"	
	10	"	"	"	
	11	"	"	"	
	12	"	"	"	
	13	42.9	97.9	"	

[illegible]

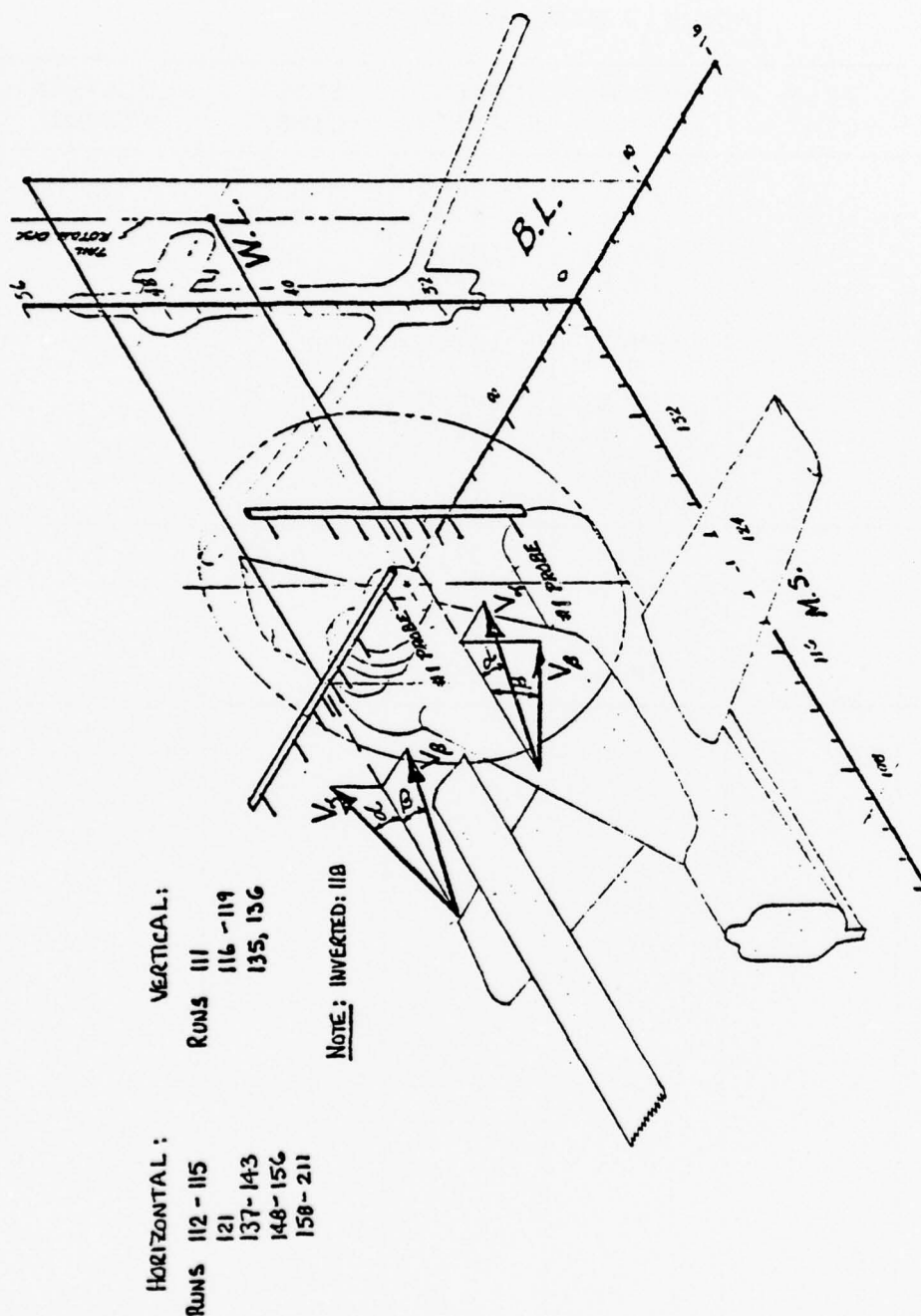


FIGURE 1 - RAKE ORIENTATION DIAGRAM

RUN 121

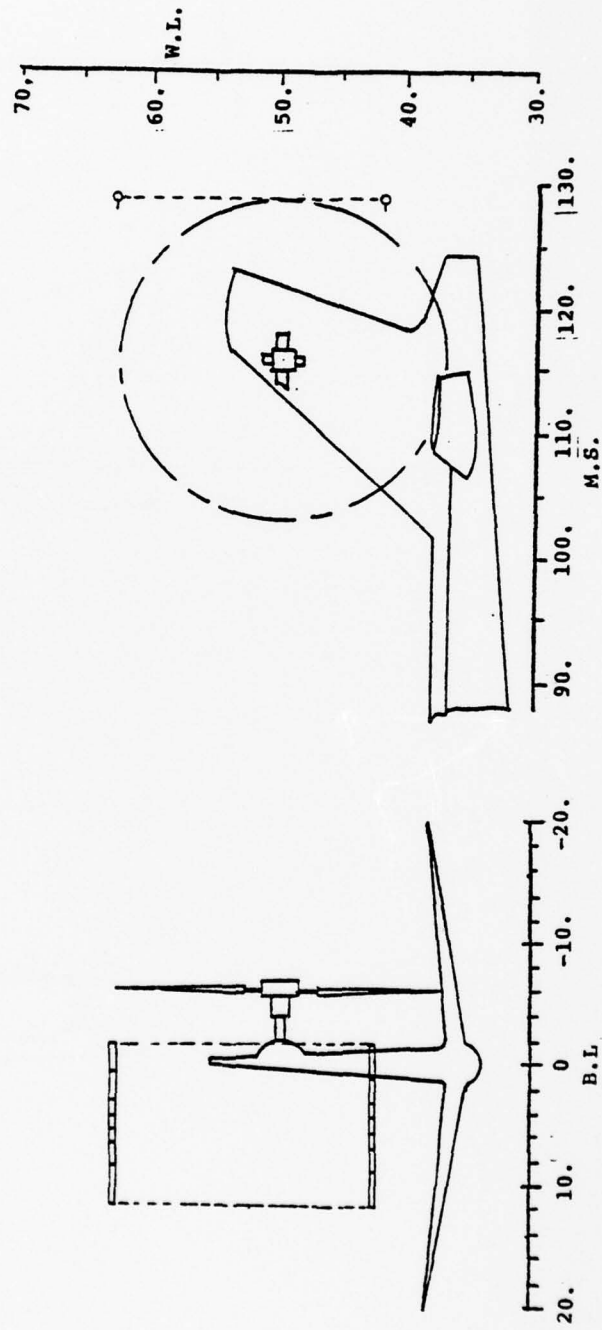


FIGURE 2 -HOT FILM RAKE LOCATIONS

RUN 135

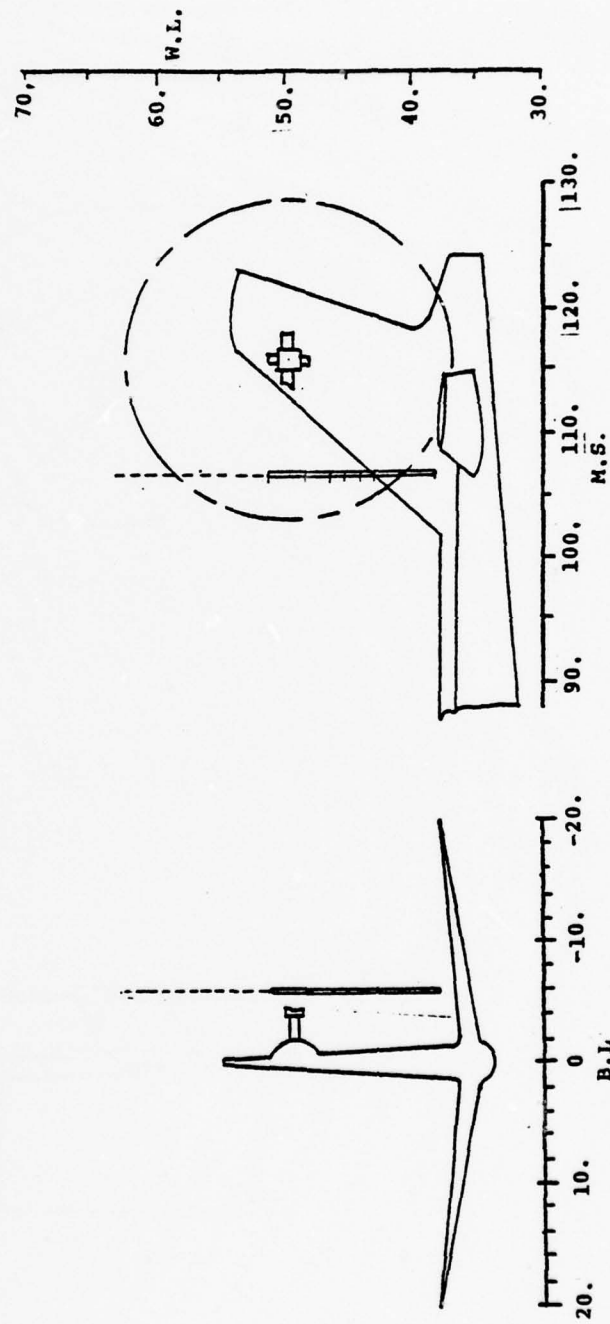


FIGURE 3 -HOT FILM RAKE LOCATIONS

RUN 136

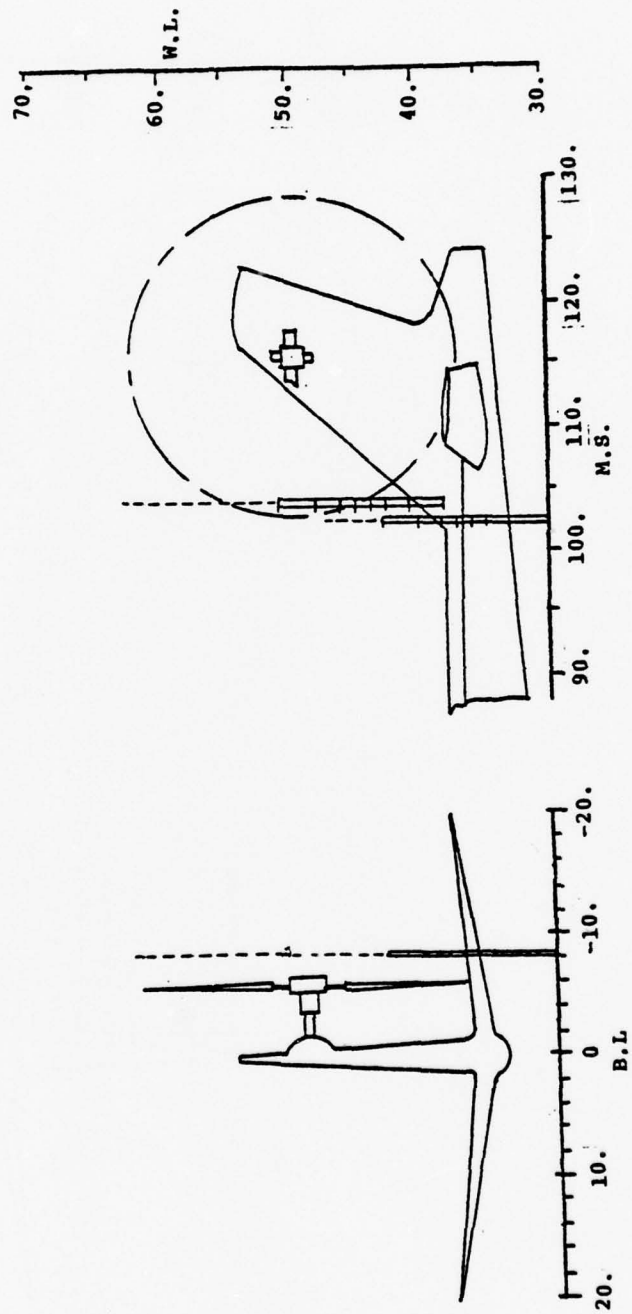


FIGURE 4 -HOT FILM RAKE LOCATIONS

RUN 137, 138, 139, 140, 141, 142,
143, 148, 149, 150, 151

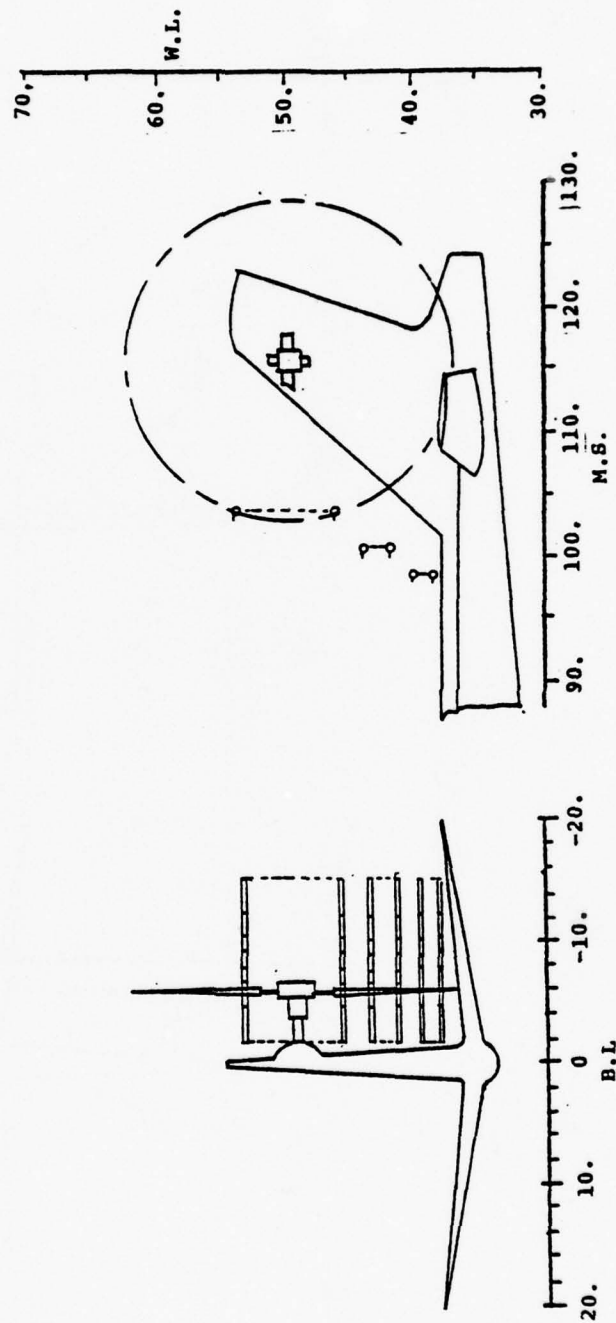


FIGURE 5 -HOT FILM RAKE LOCATIONS

RUN 152-156, 158-211

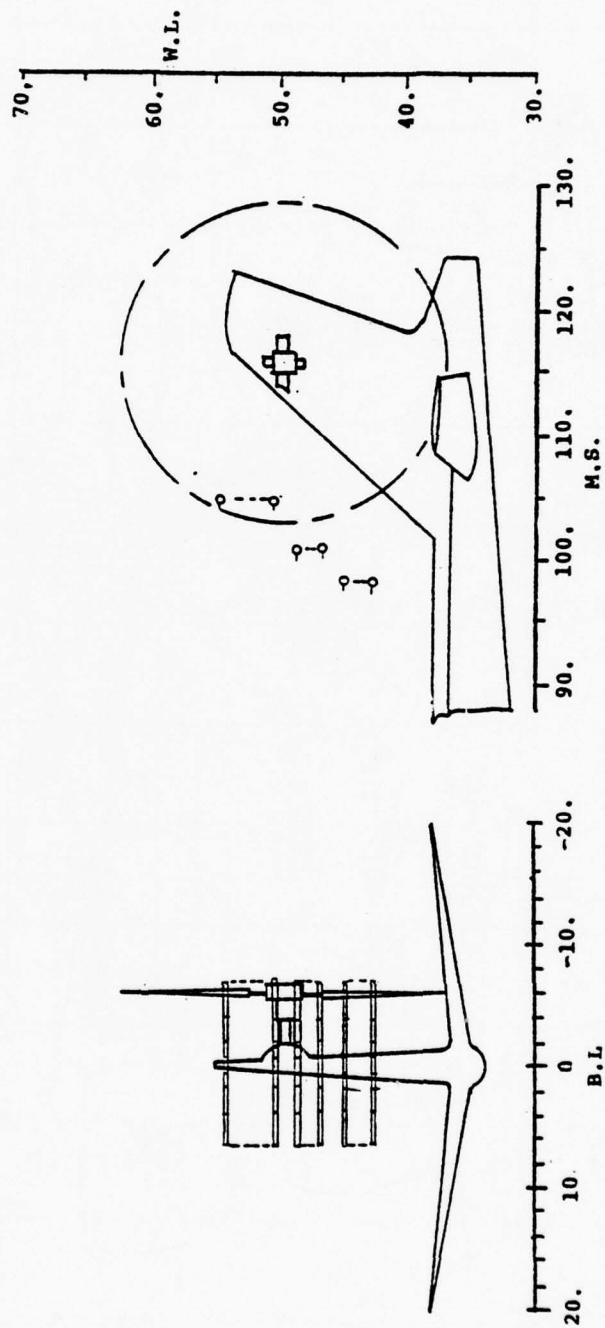
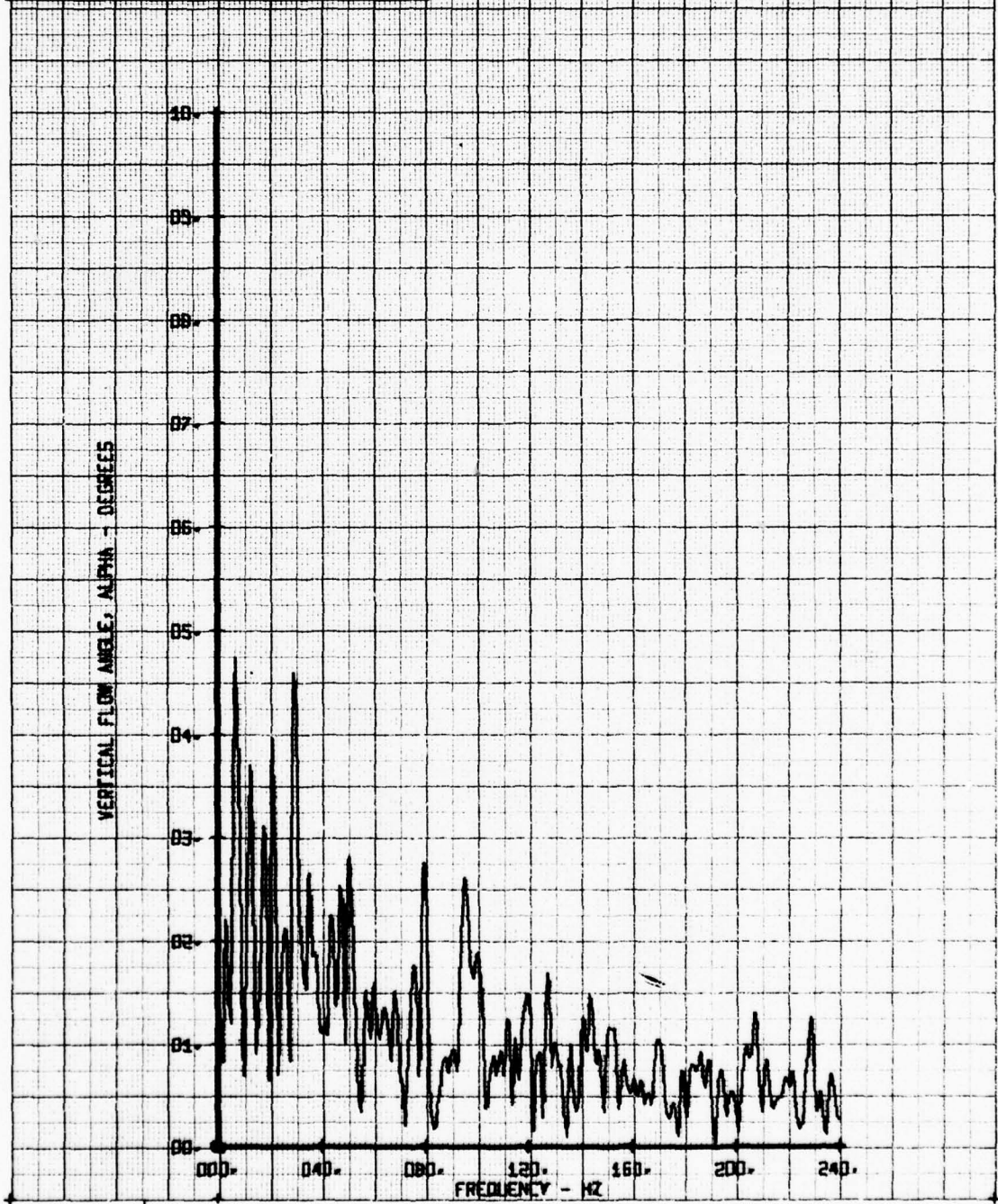


FIGURE 6 -HOT FILM RAKE LOCATIONS

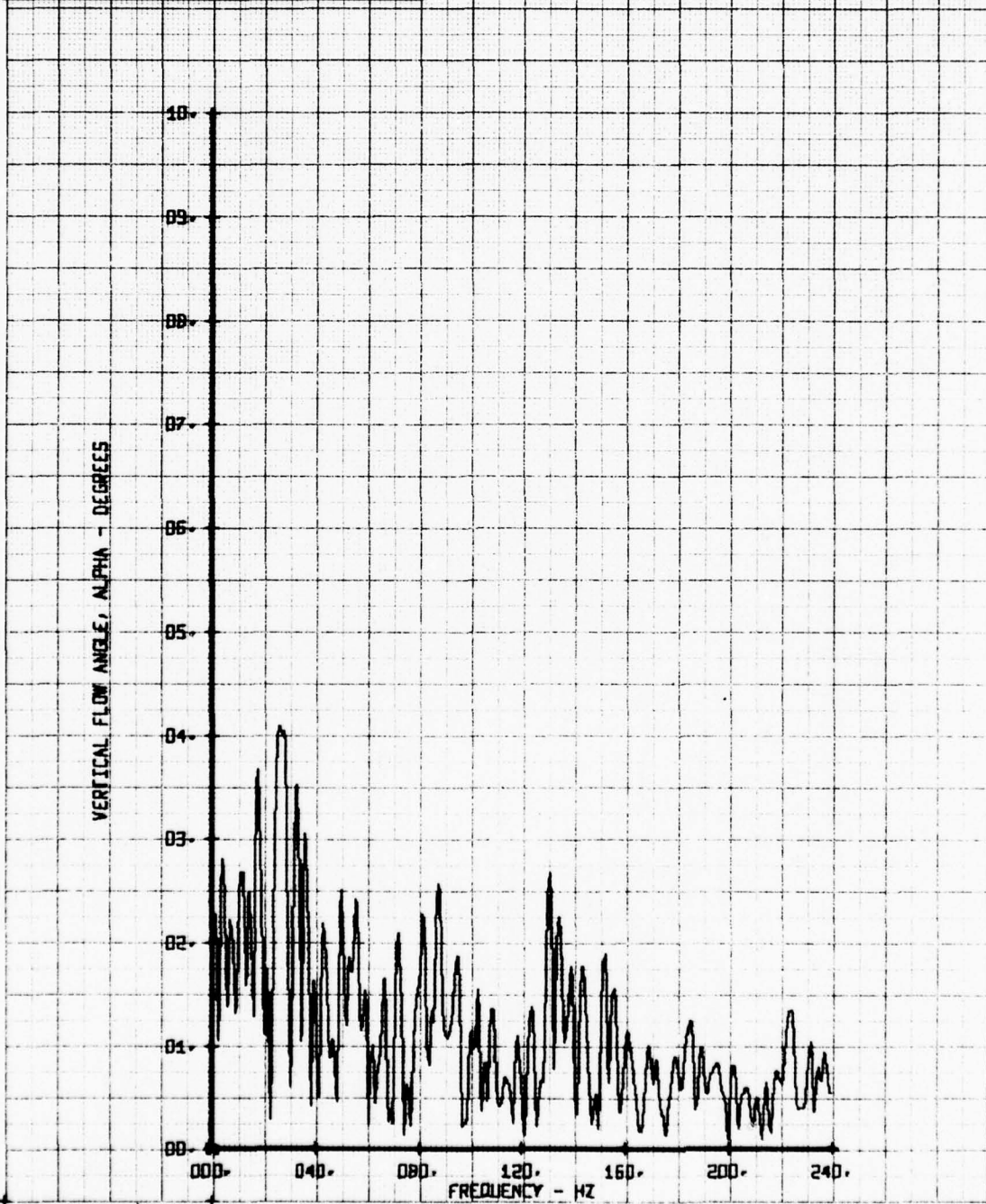
NOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 150 FATHOMS
RUN 15L TP 2

LEGEND
CH. PARAMETER
56 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FATKING
RUN 151 TP 3

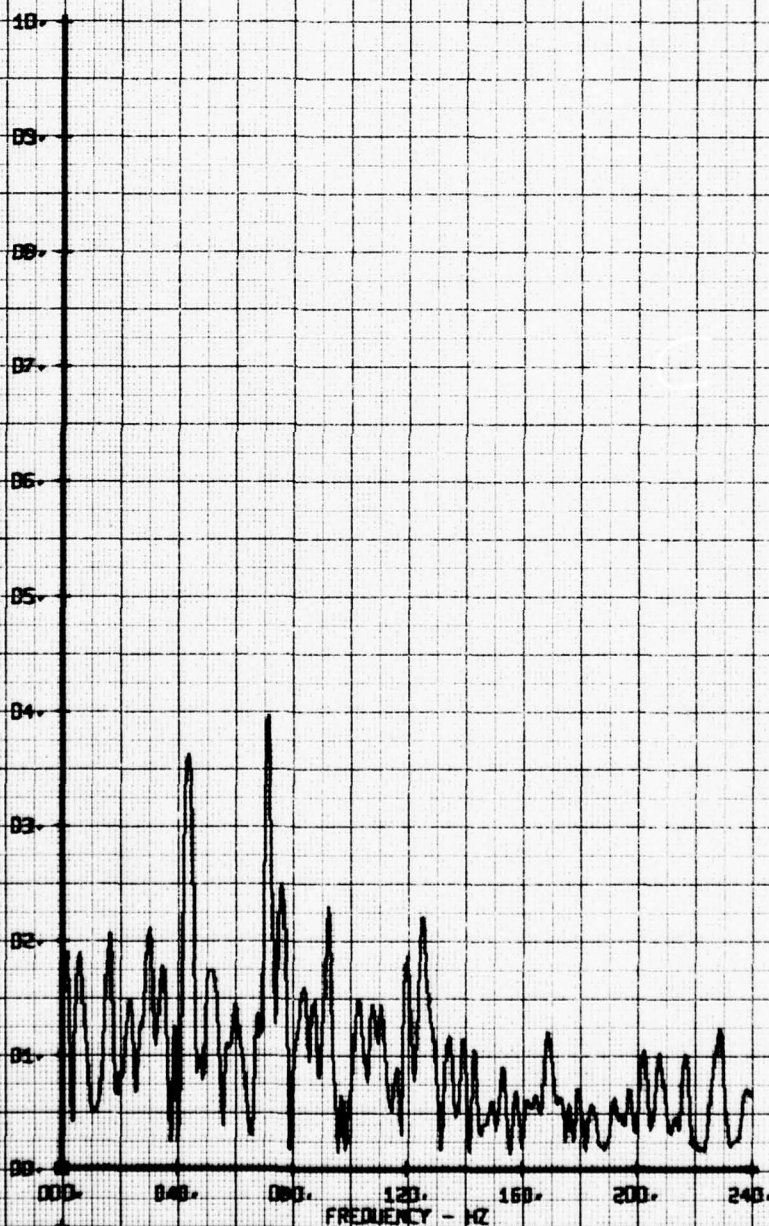
LEGEND
CH 66
PARAMETER ALPHA



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RUN 151 TP 4

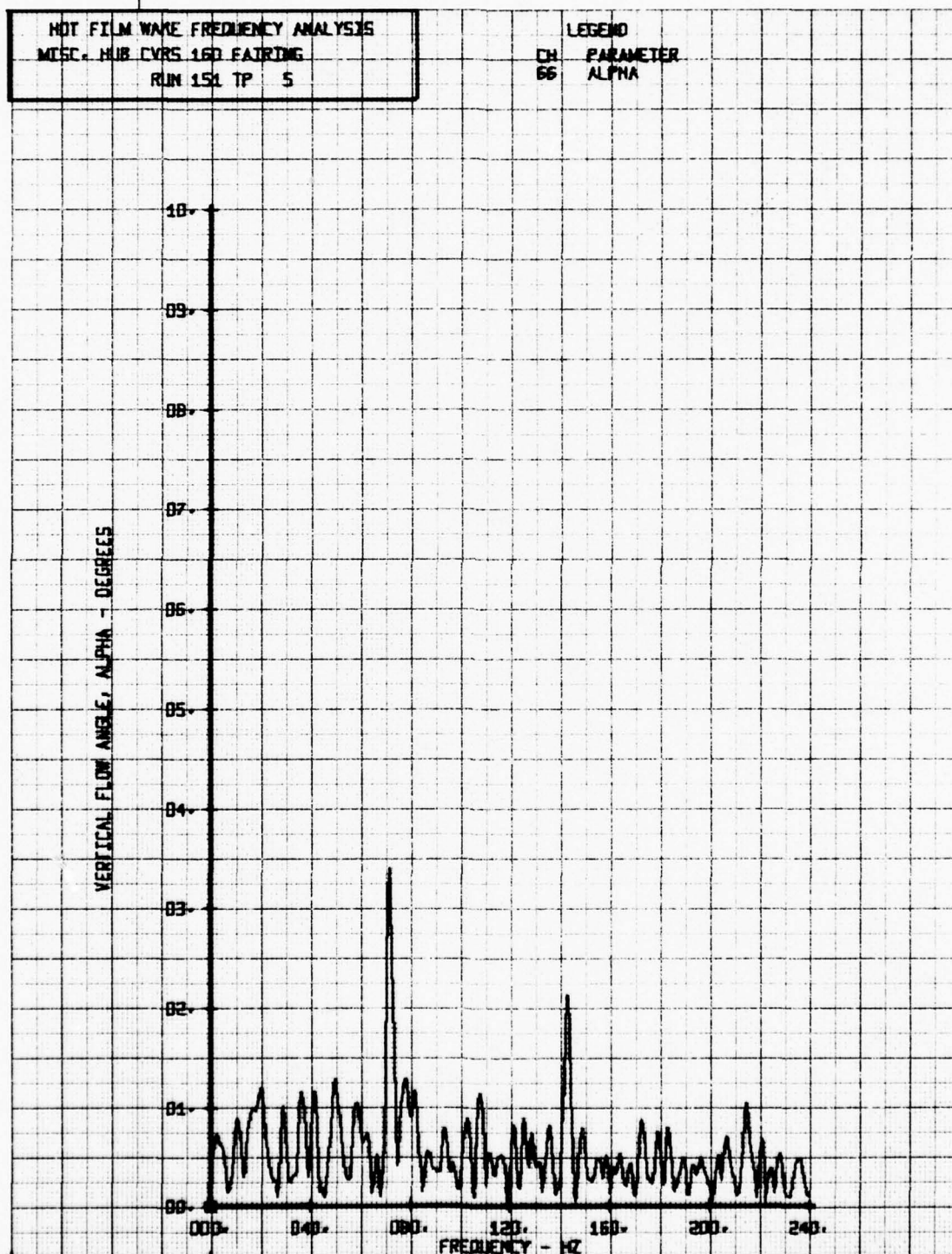
LEGEND
CH PARAMETER
65 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
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RUN 151 TP 5

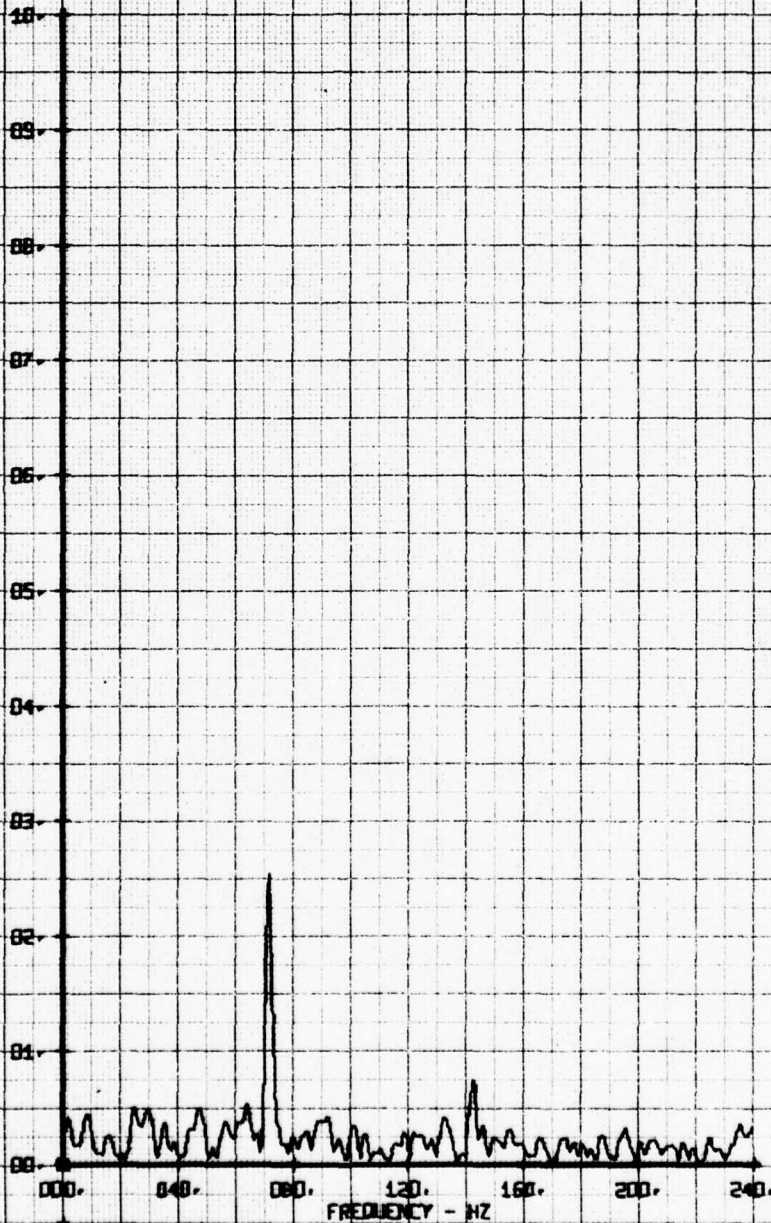
LEGEND
CH PARAMETER
66 ALPHA



NOT FILM WARE FREQUENCY ANALYSIS
MISC. MIB CYMS 160 FAIRING
RUN 151 TP 6

LEGEND
CH PARAMETER
66 ALPHA

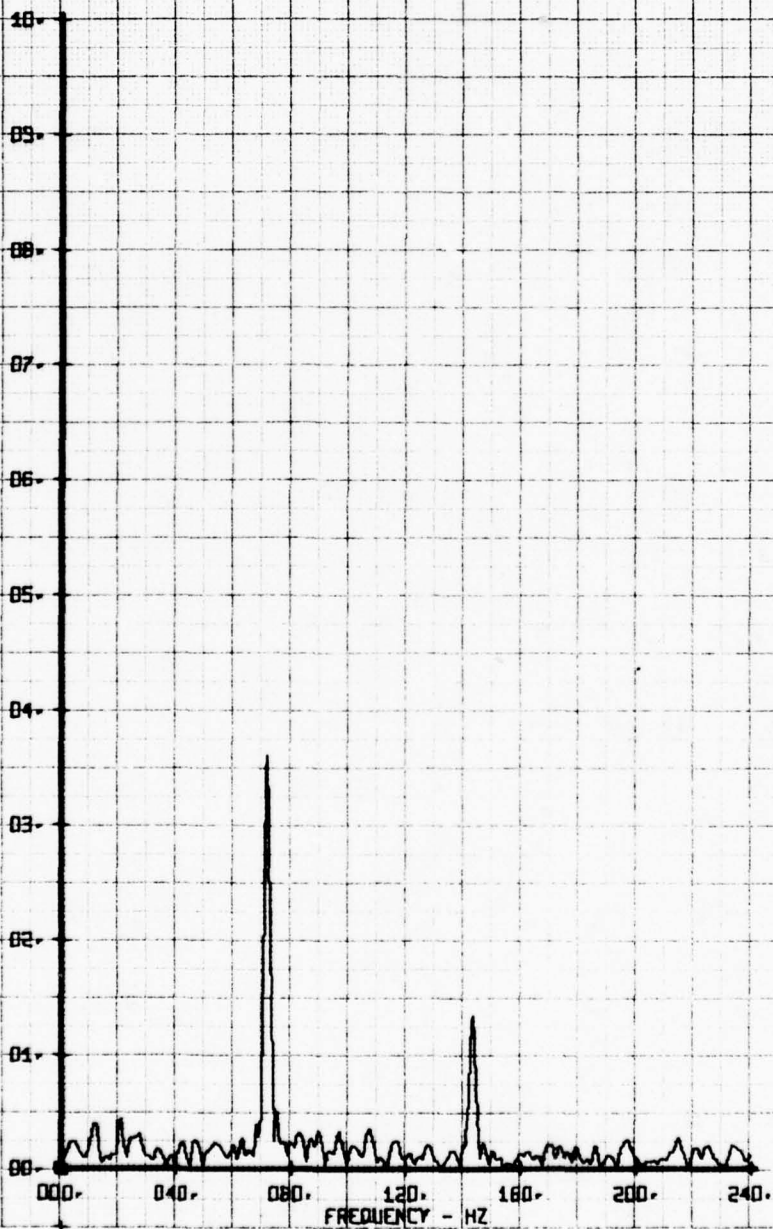
VERTICAL FLOW ANGLE, ALPHA - DEGREES



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MISC. HUB CMRS 180 FAIRING
RUN 151 TP 7

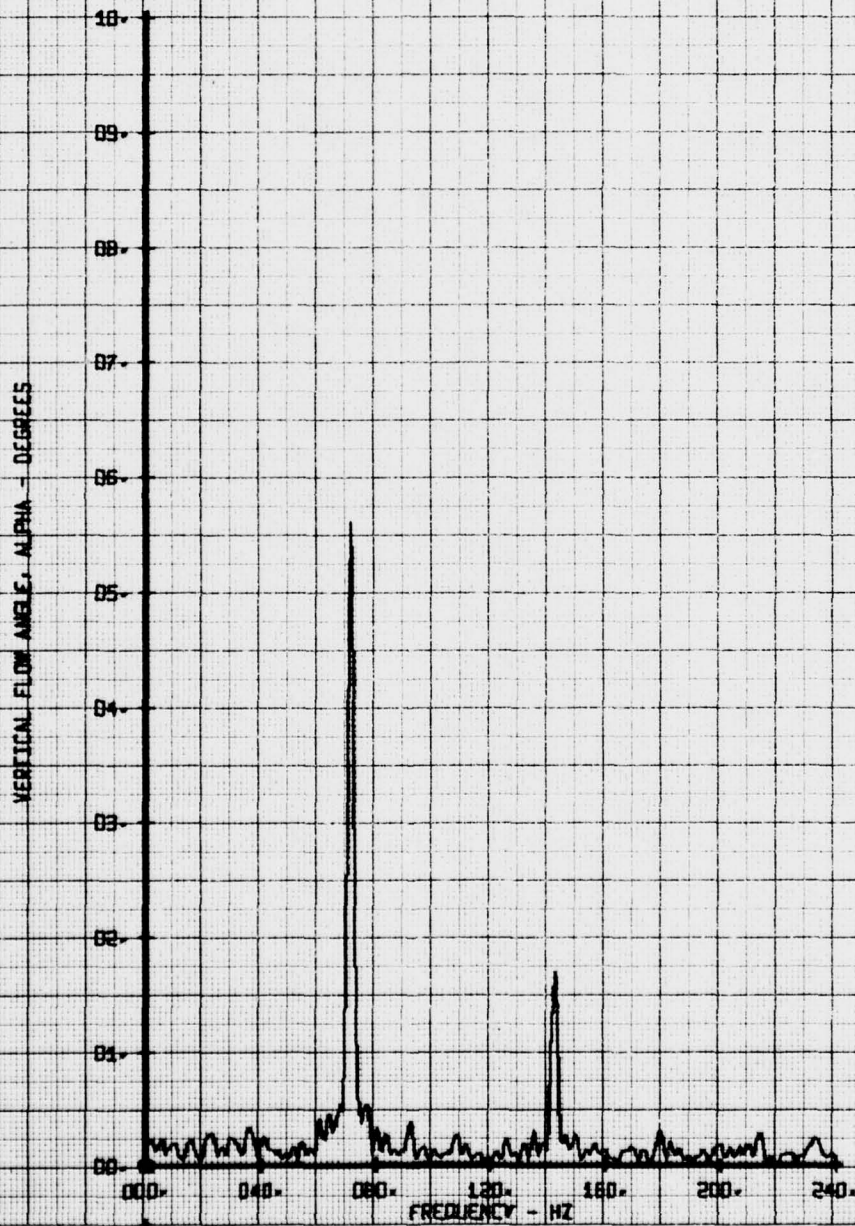
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MOSC, HUB CVRS 160 FAIRING
RUN 151 TP B

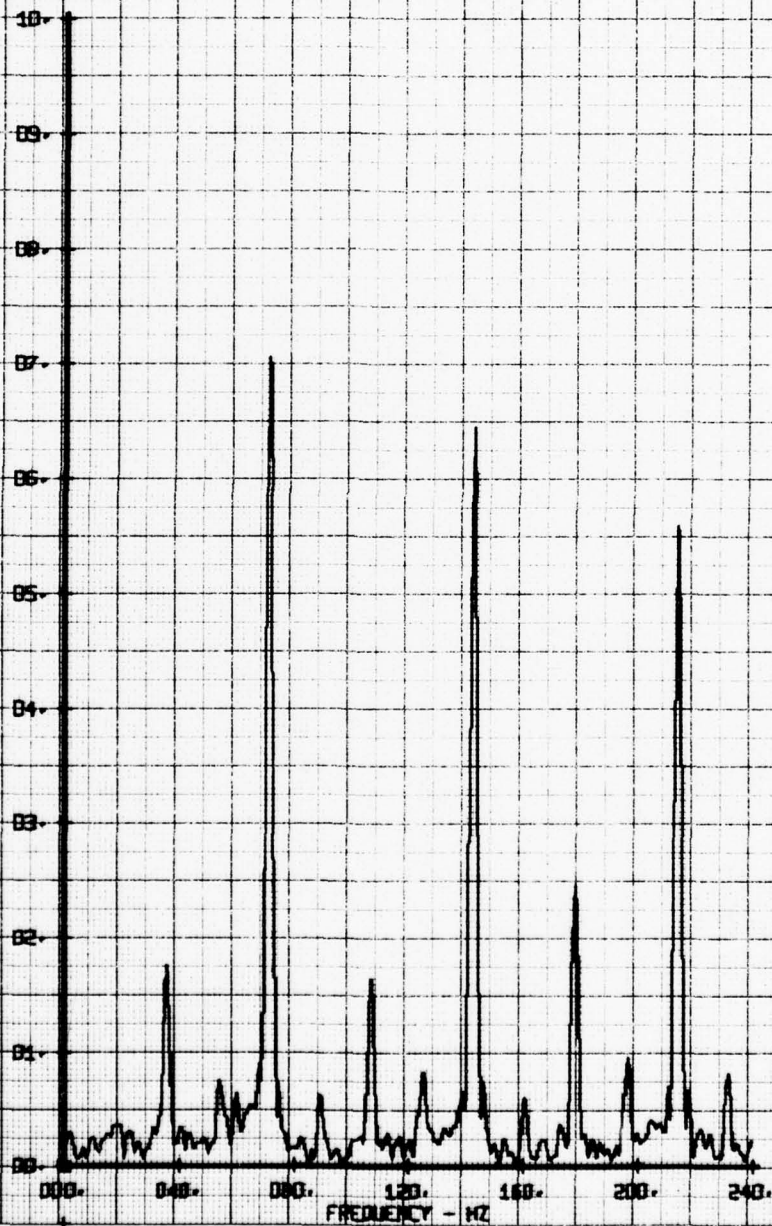
LEGEND
CH 66
PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 100 FAIRING
RUN 151 TP 9

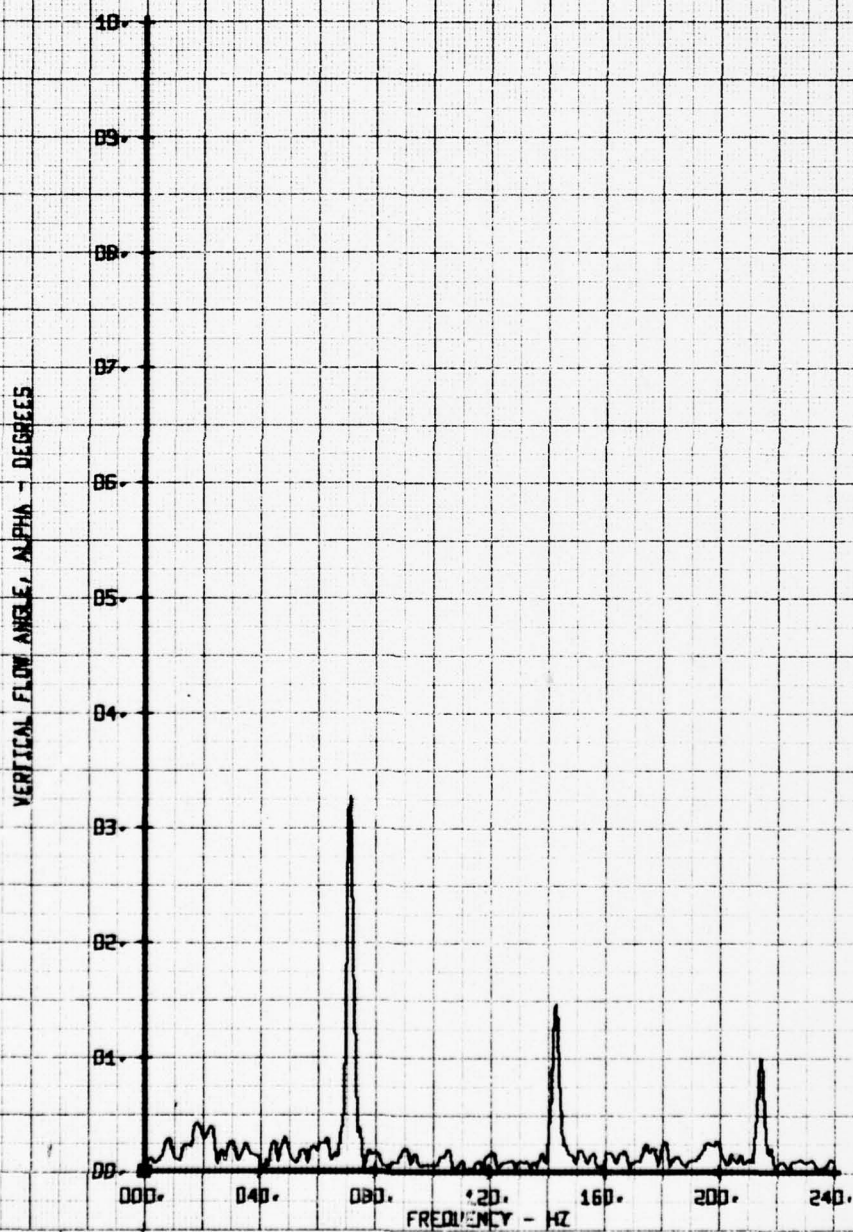
LEGEND
CH 66
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FAIRING
RUN 151 TP 10

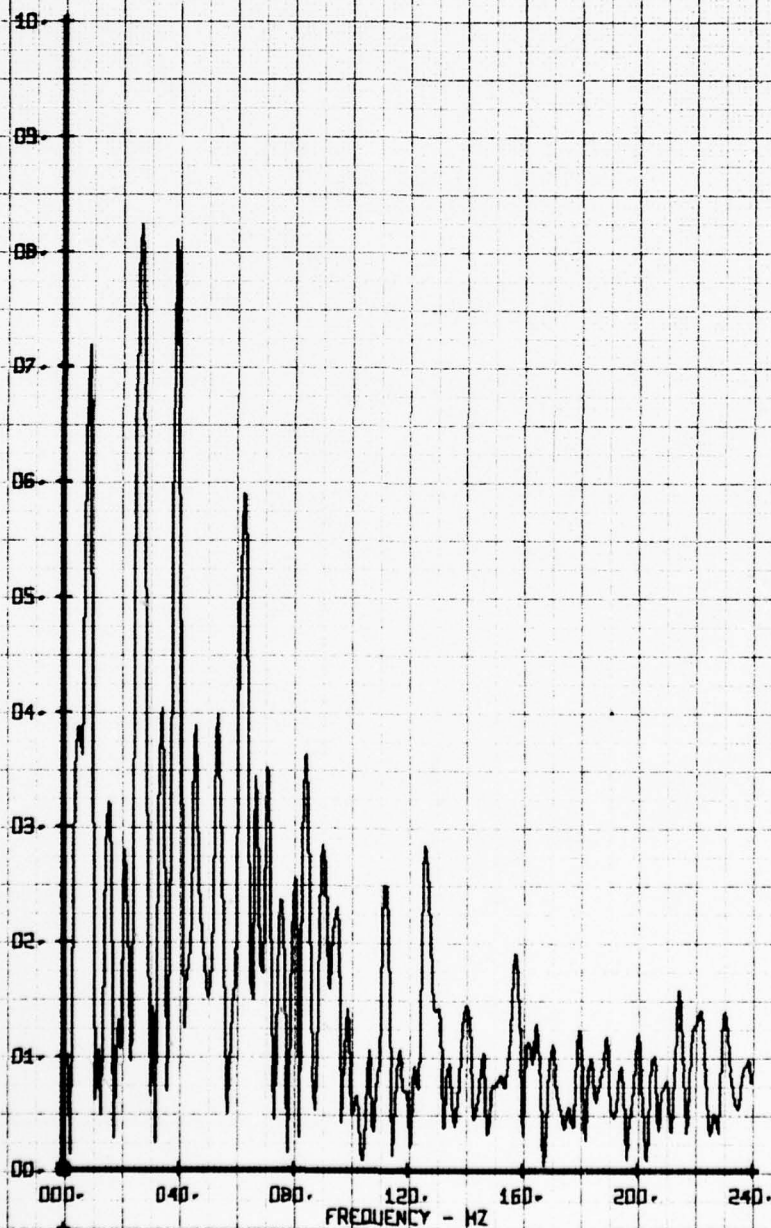
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 160 FATHING
RUN 151 TP 2

LEGEND
CH PARAMETER
65 BETA

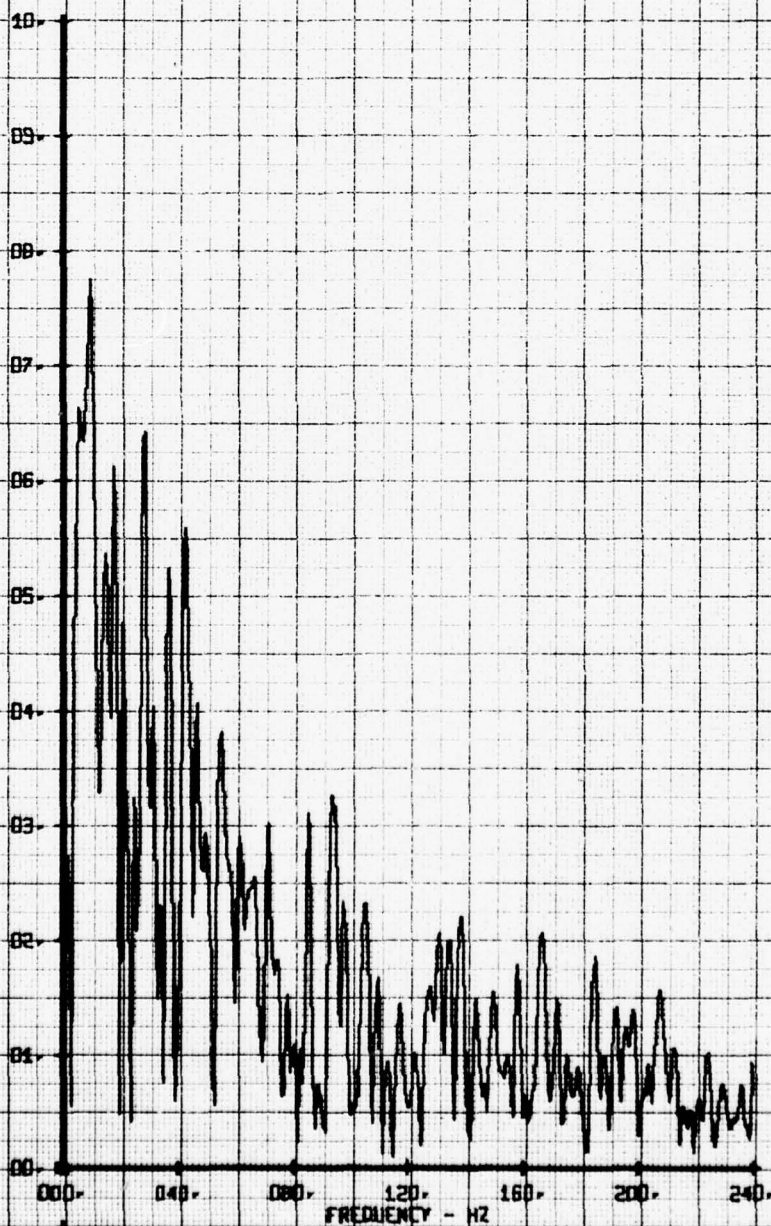
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FAIRING
RUN 151 TP 3

LEGEND
CH 65
PARAMETER
BETA

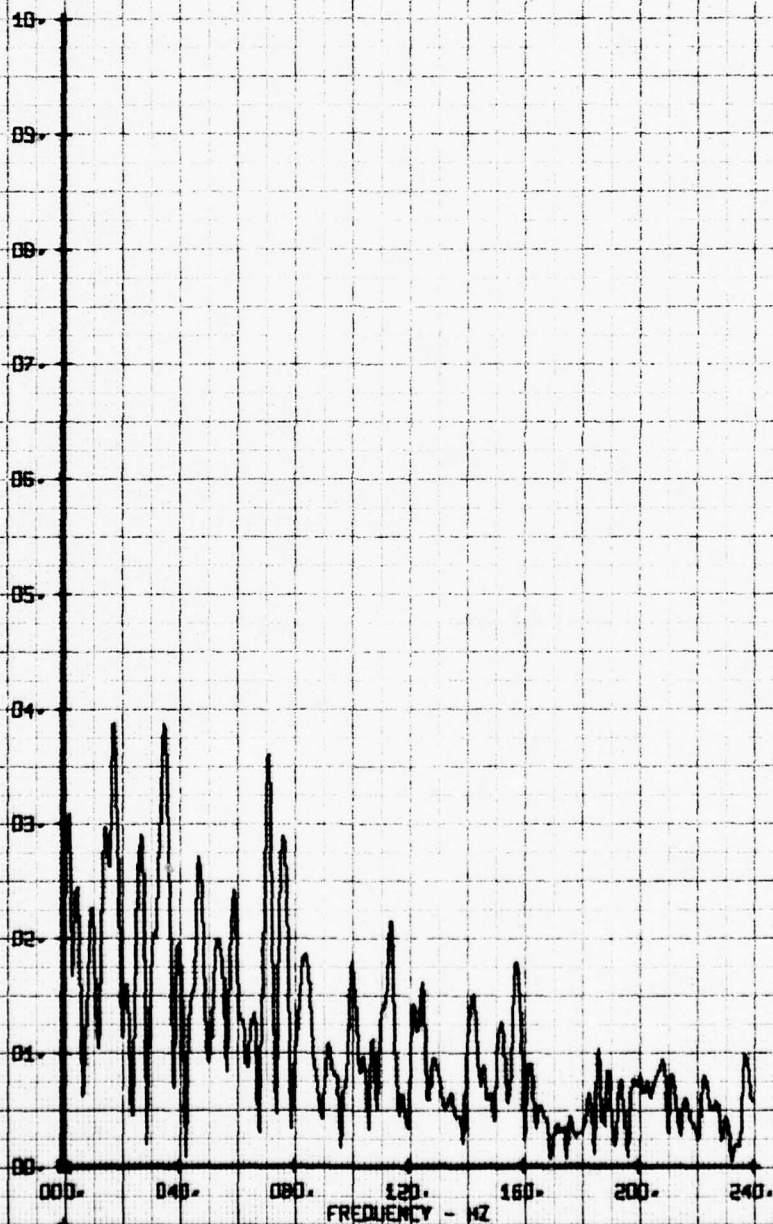
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 160 FAIRING
RUN 151 TP 4

LEGEND
CH PARAMETER
65 BETA

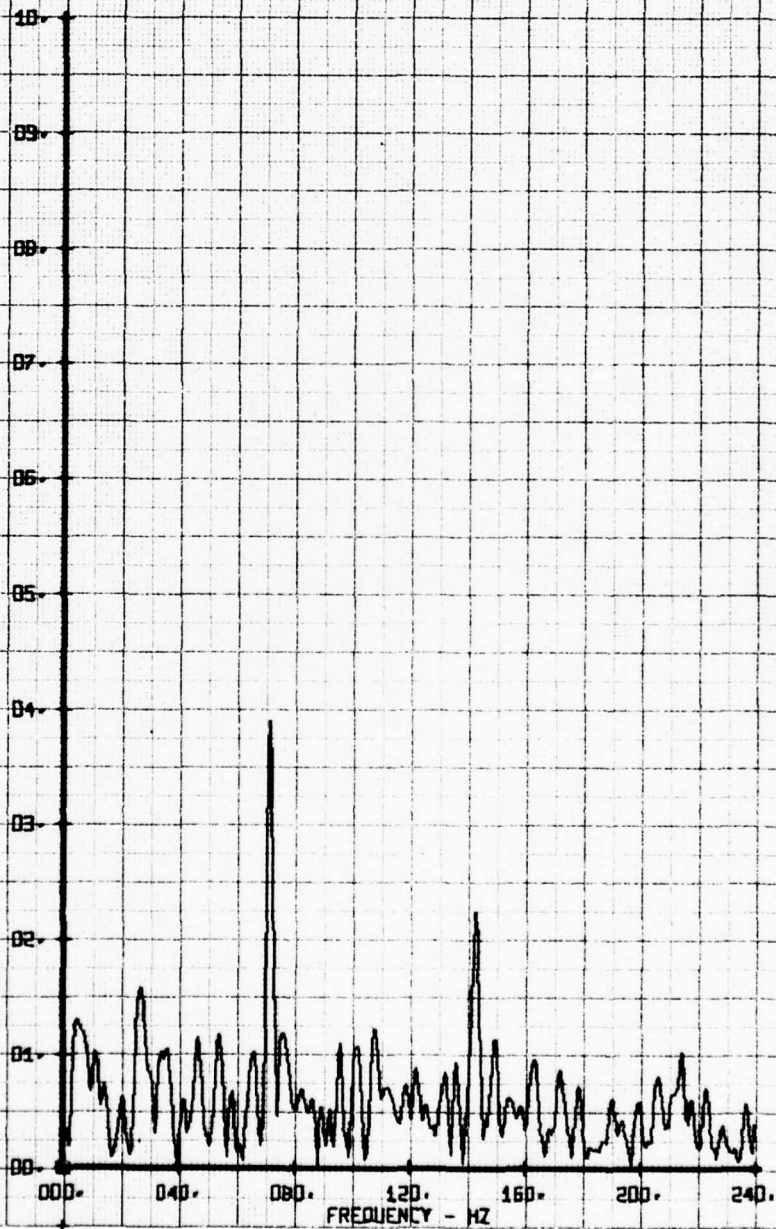
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MESC. HUB CYRS 160 FATHING
RUN 154 TP 5

LEGEND
C1 PARAMETER
B5 BETA

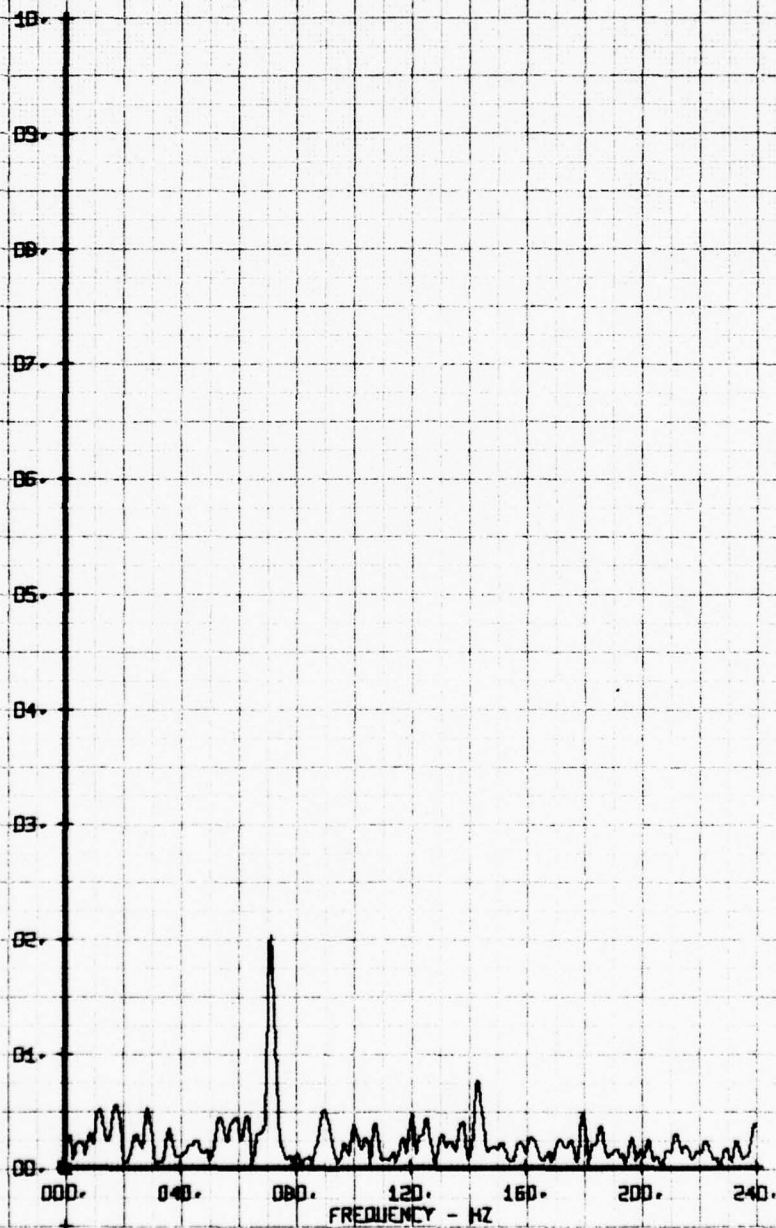
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 160 FAIRING
RUN 151 TP 6

LEGEND
CH PARAMETER
BS BETA

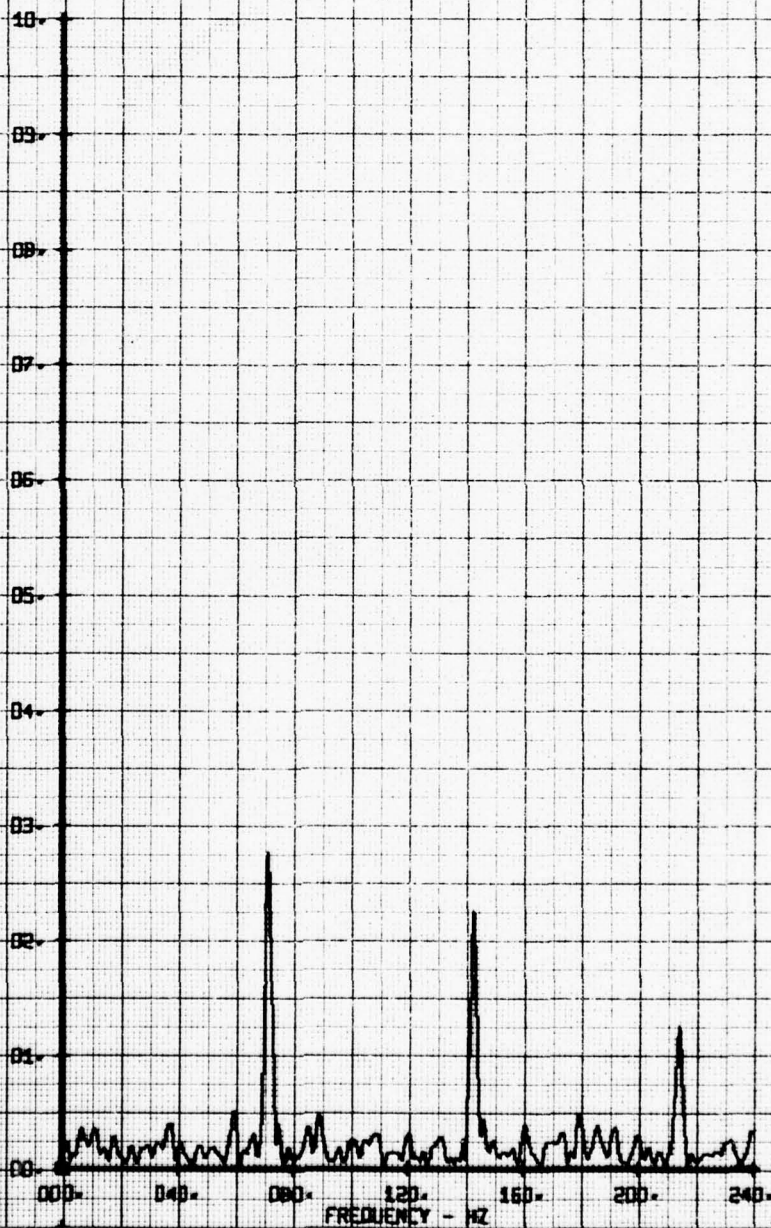
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
MSC. HUB CVRS 160 FAIRING
RUN 151 TP 7

LEGEND
CH PARAMETER
65 BETA

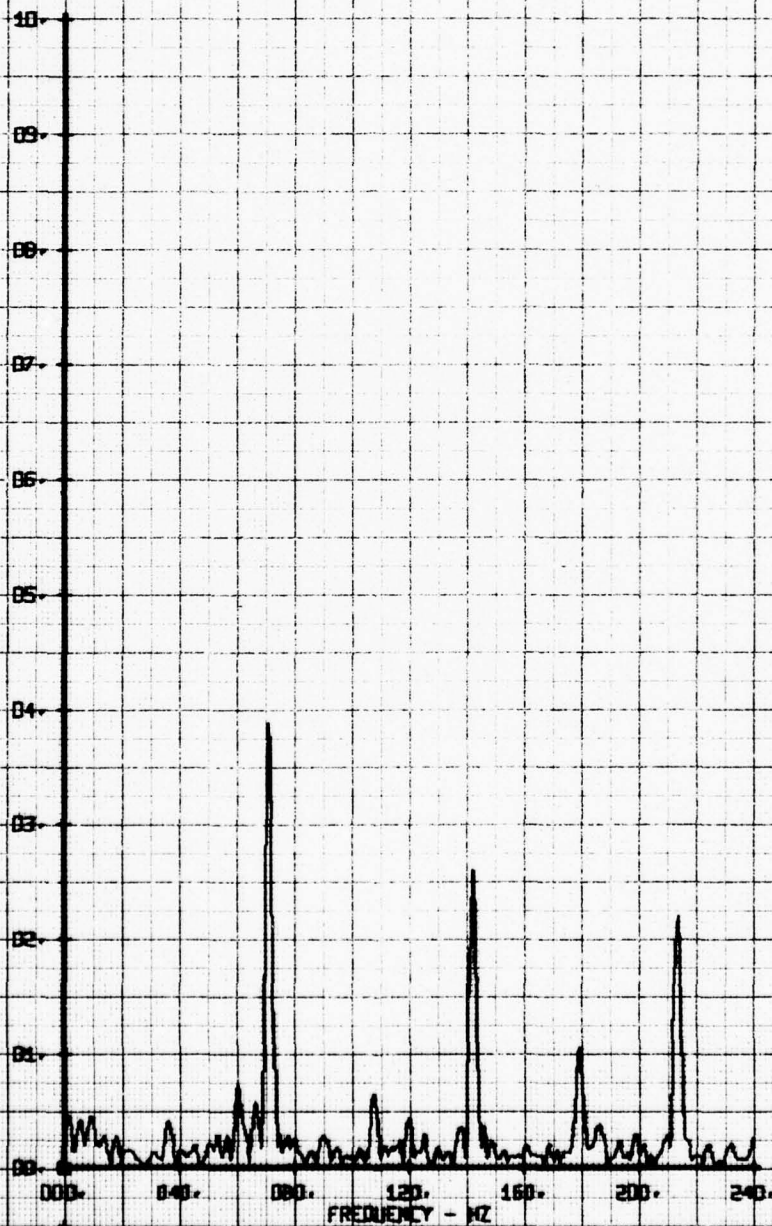
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
MSC. HUB CYRS 160 FAIRING
RUN 151 TP B

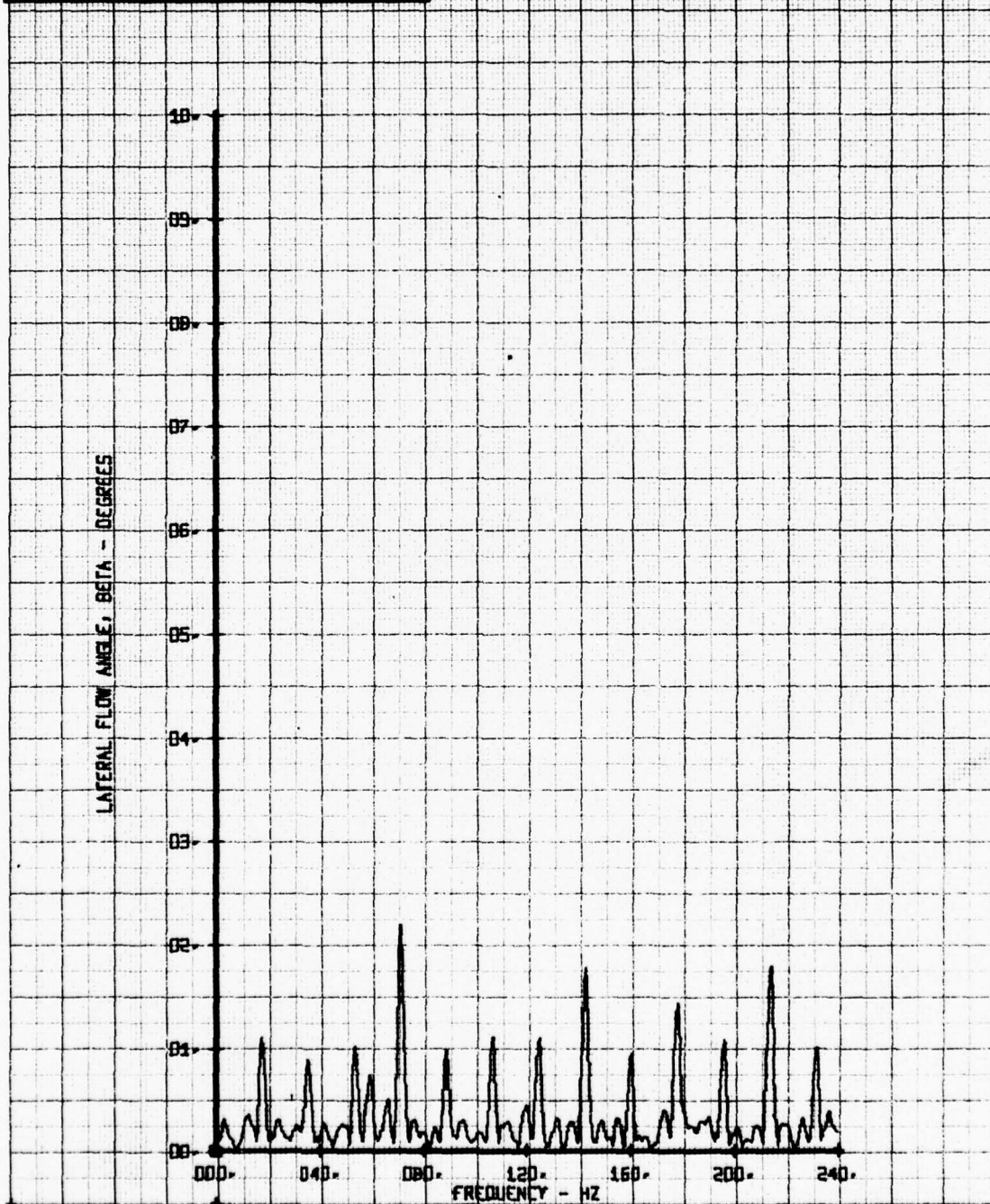
LEGEND
CH 65
PARAMETER
BETA

LATERAL FLOW ANGLE, BETA - DEGREES



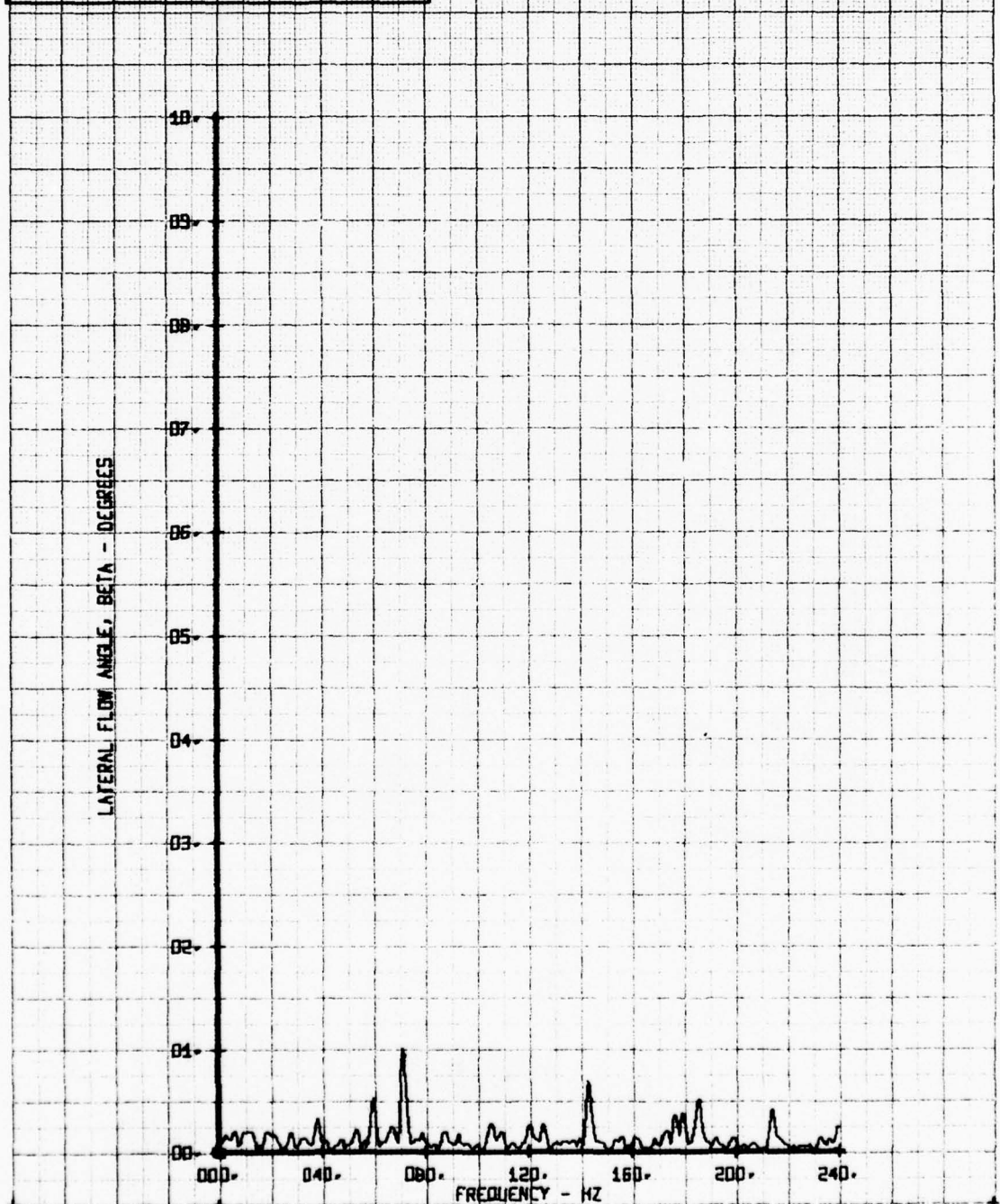
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 MISC. HUB CYRS 160 FAIRING
 RUN 151 TP 9

LEGEND
 CH PARAMETER
 65 BETA



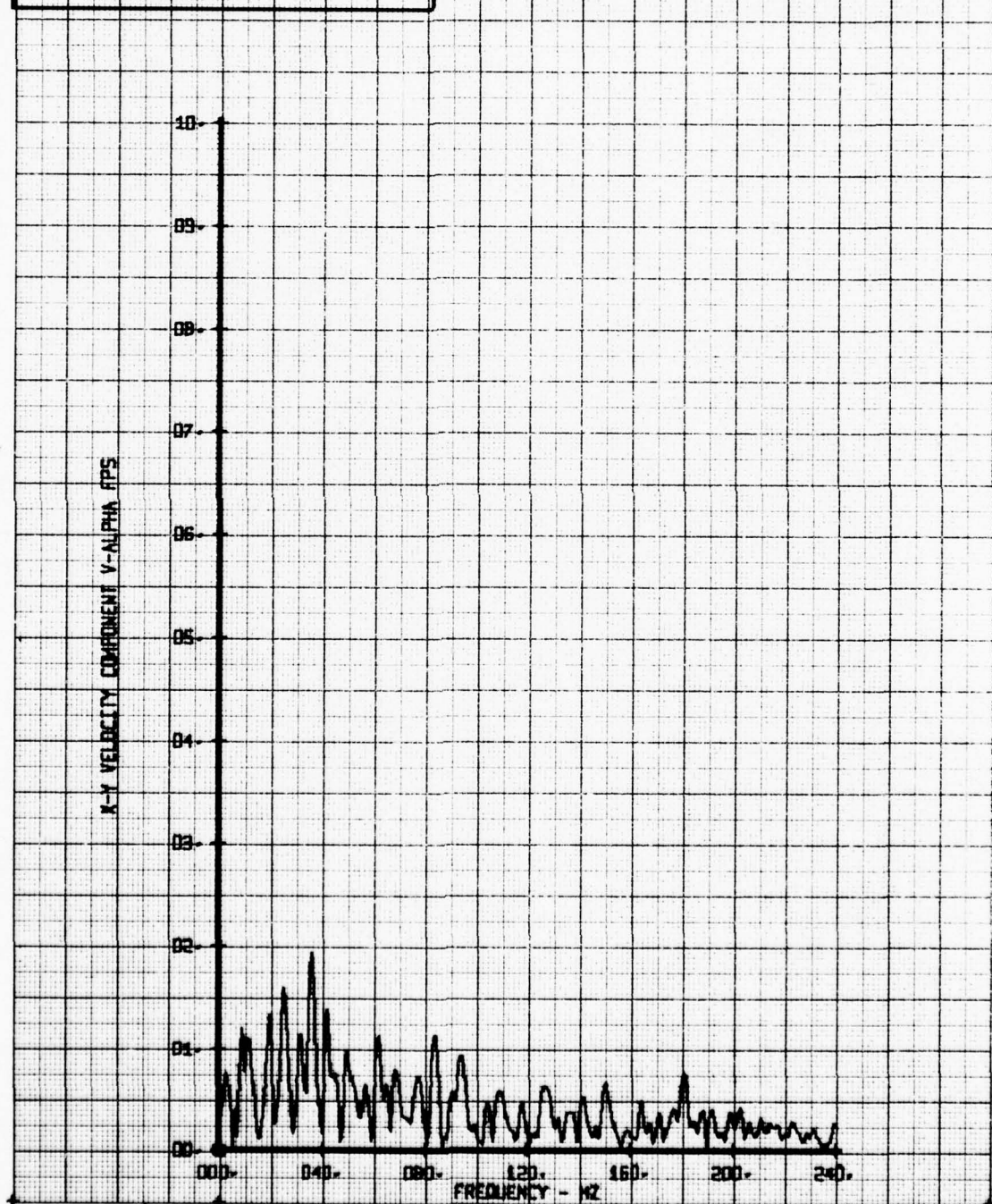
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MISC. HUB CYRS 160 FAIRING
RUN 151 TP 10

LEGEND
CH 65
PARAMETER
BETA



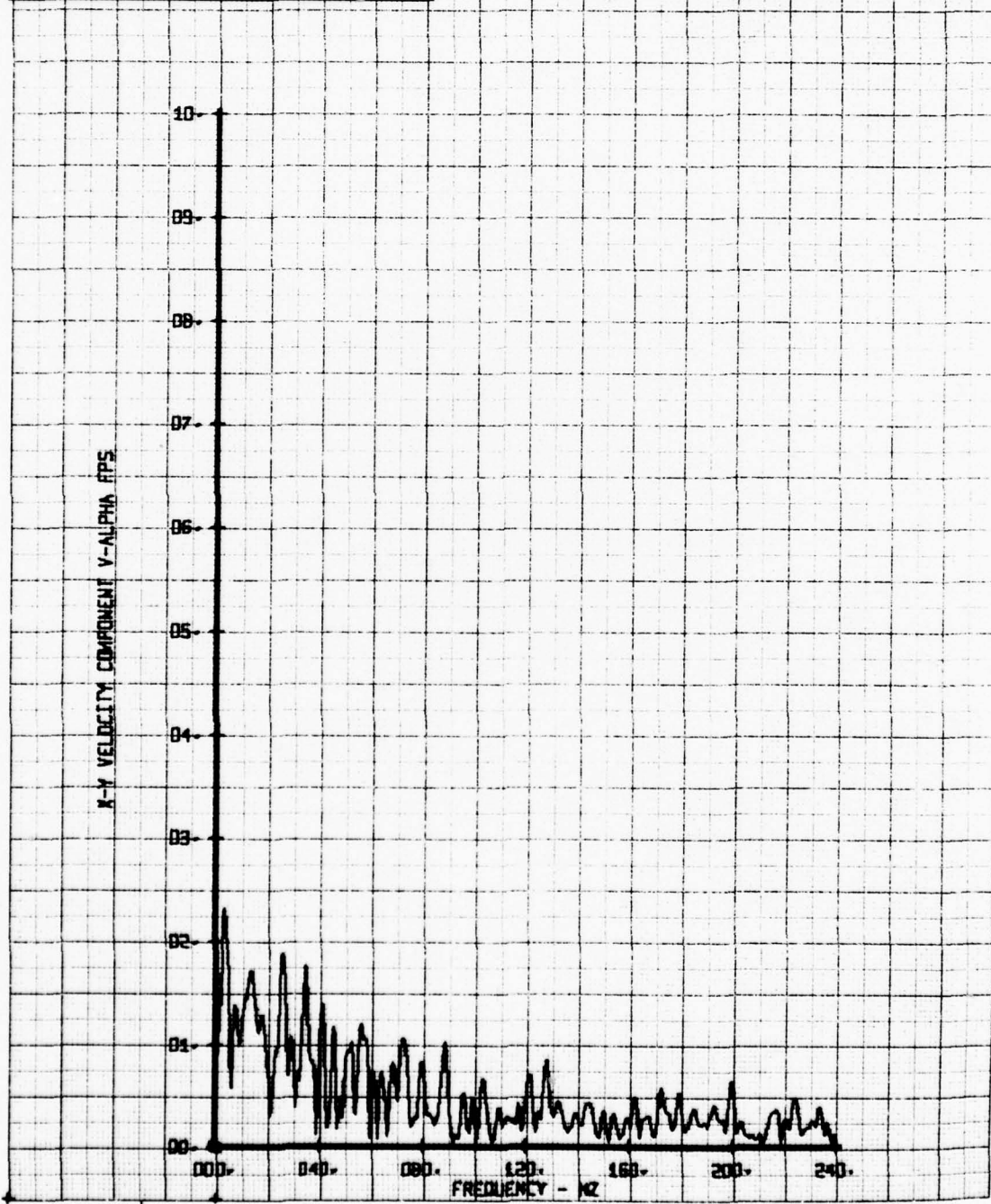
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FAIRING
RUN 151 TP 2

LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MSC- HUB CVRS 160 FATRING
RUN 151 TP 3

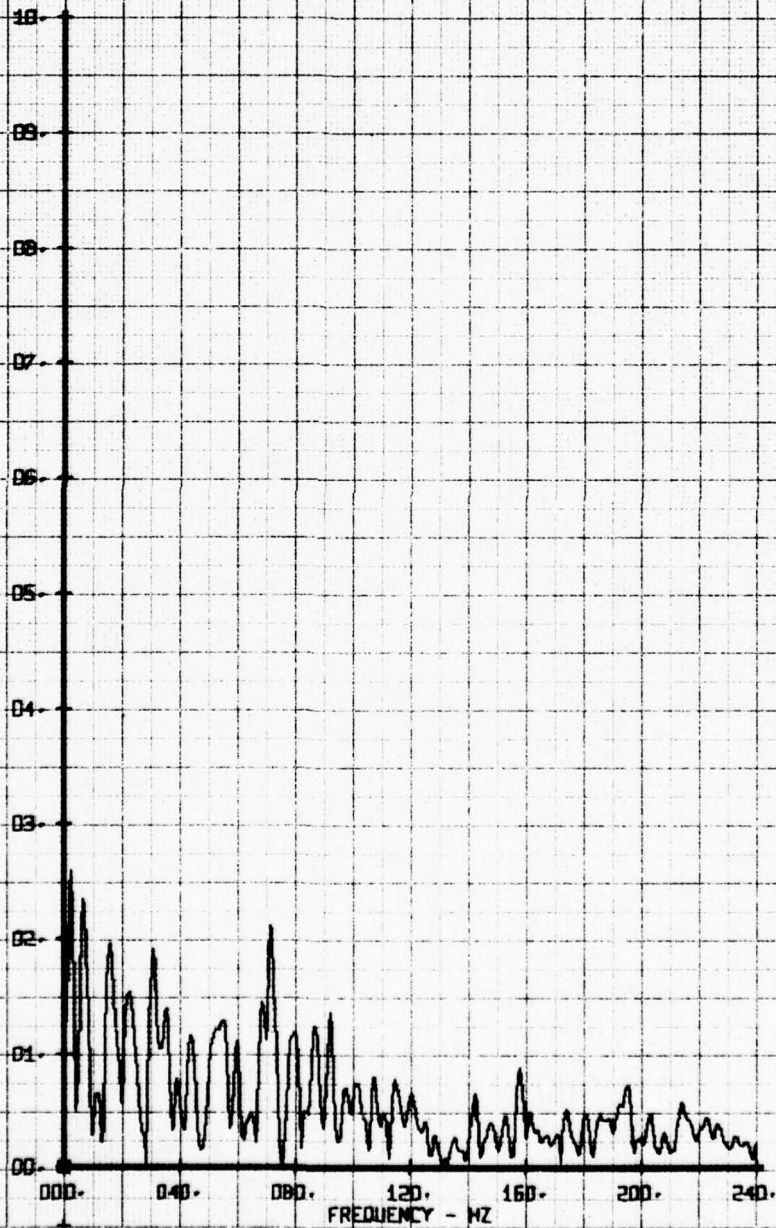
LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. NUM CYCS 100 FATHING
RUN 151 TP 4

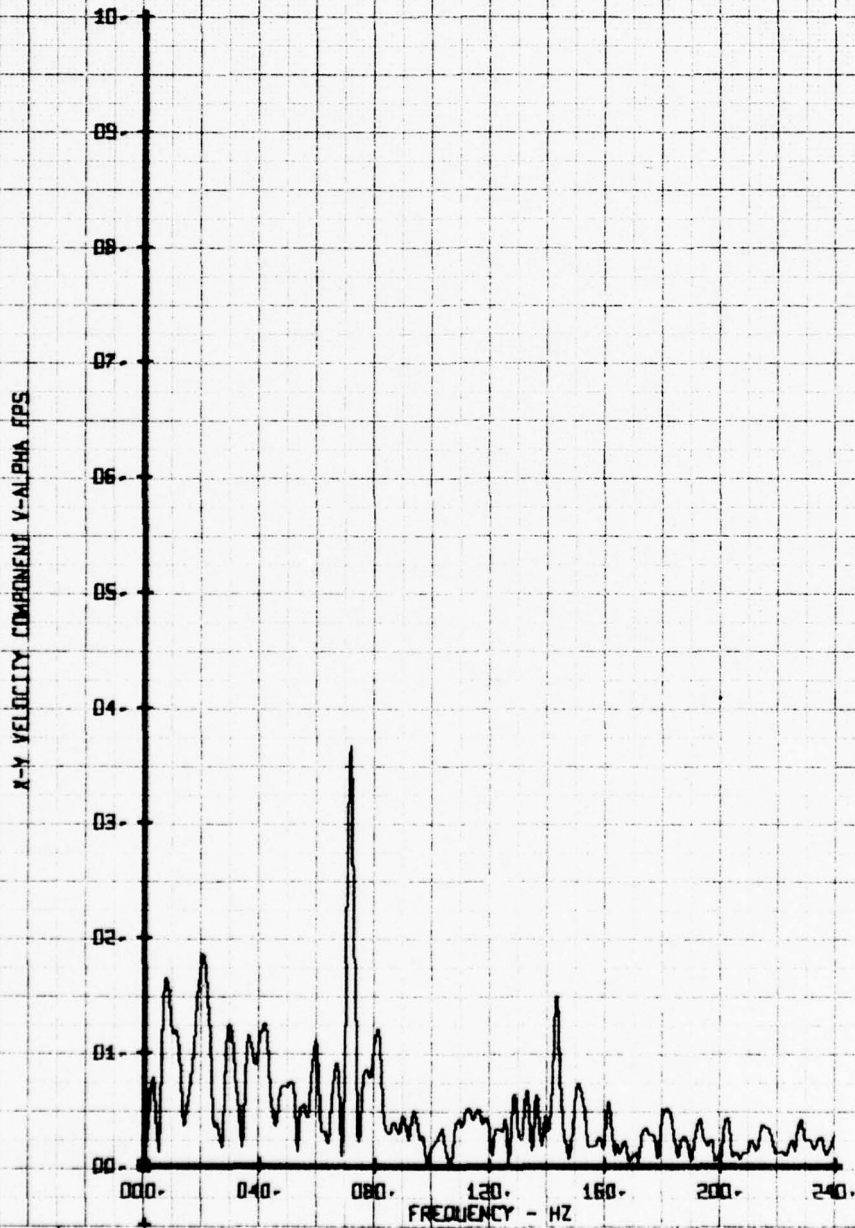
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WIRE FREQUENCY ANALYSIS
MISC. NUM CYRS 160 FAIRING
RUN 151 TP 5

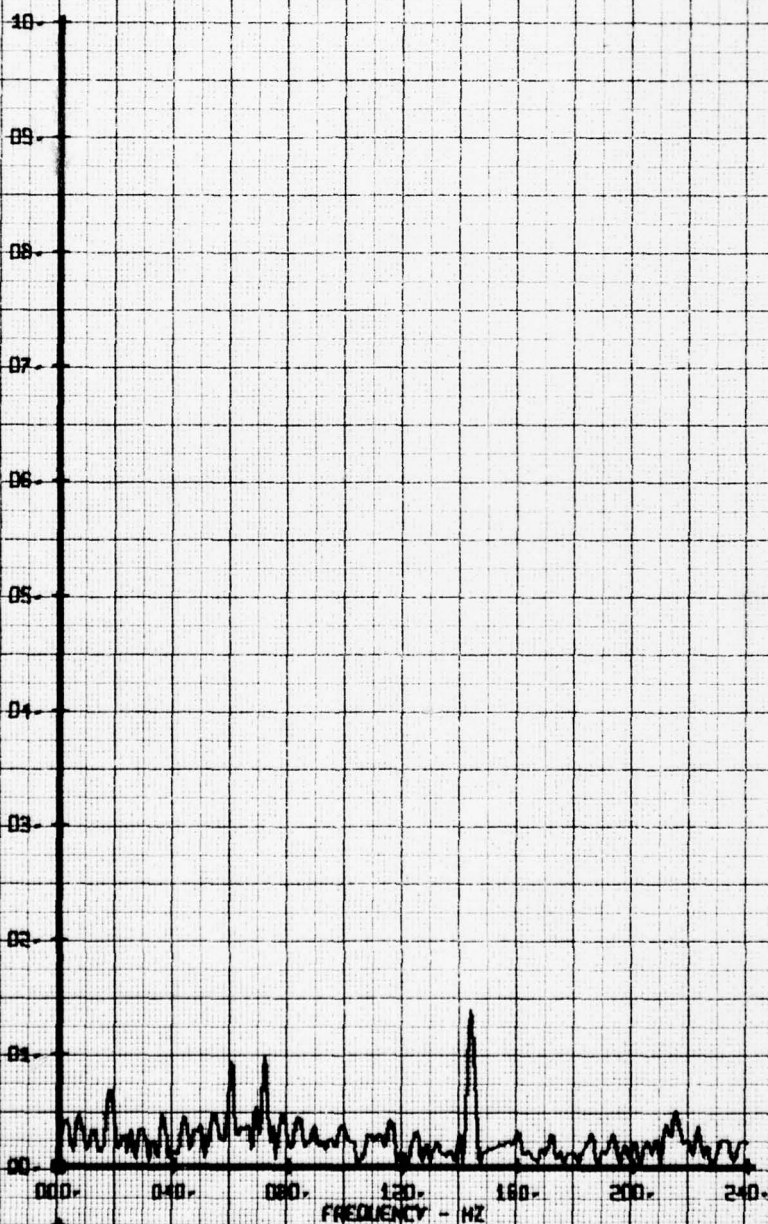
LEGEND
CH 66
PARAMETER
V-ALPHA



NOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FAIRING
RUN 151 TP 6

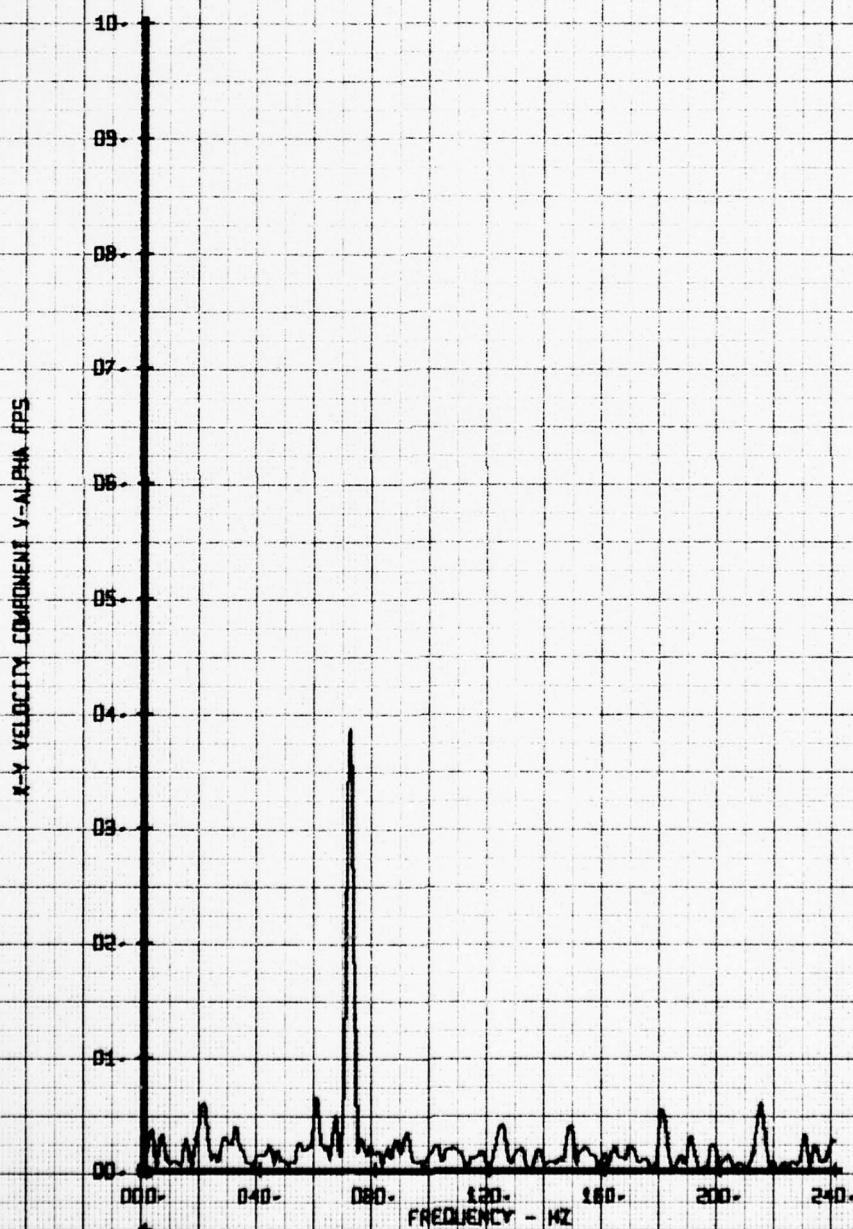
LEGEND
CH PARAMETER
66 V-ALPHA

V-ALPHA COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 160 FAIRING
RUN 151 TP 7

LEGEND
CH 66
PARAMETER
V-ALPHA

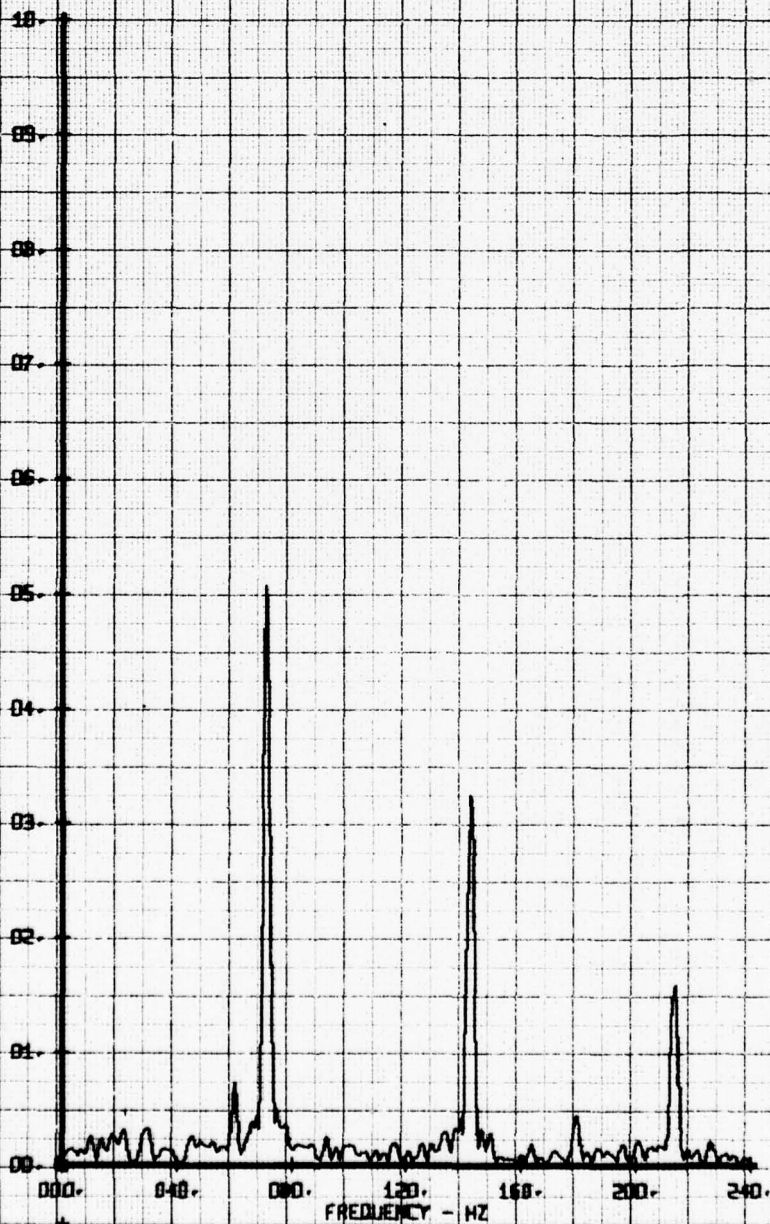


HOT FILM WAVE FREQUENCY ANALYSIS
 MISC. MAG CYRS 160 FAIRING
 RUN 151 TP 8

LEGEND

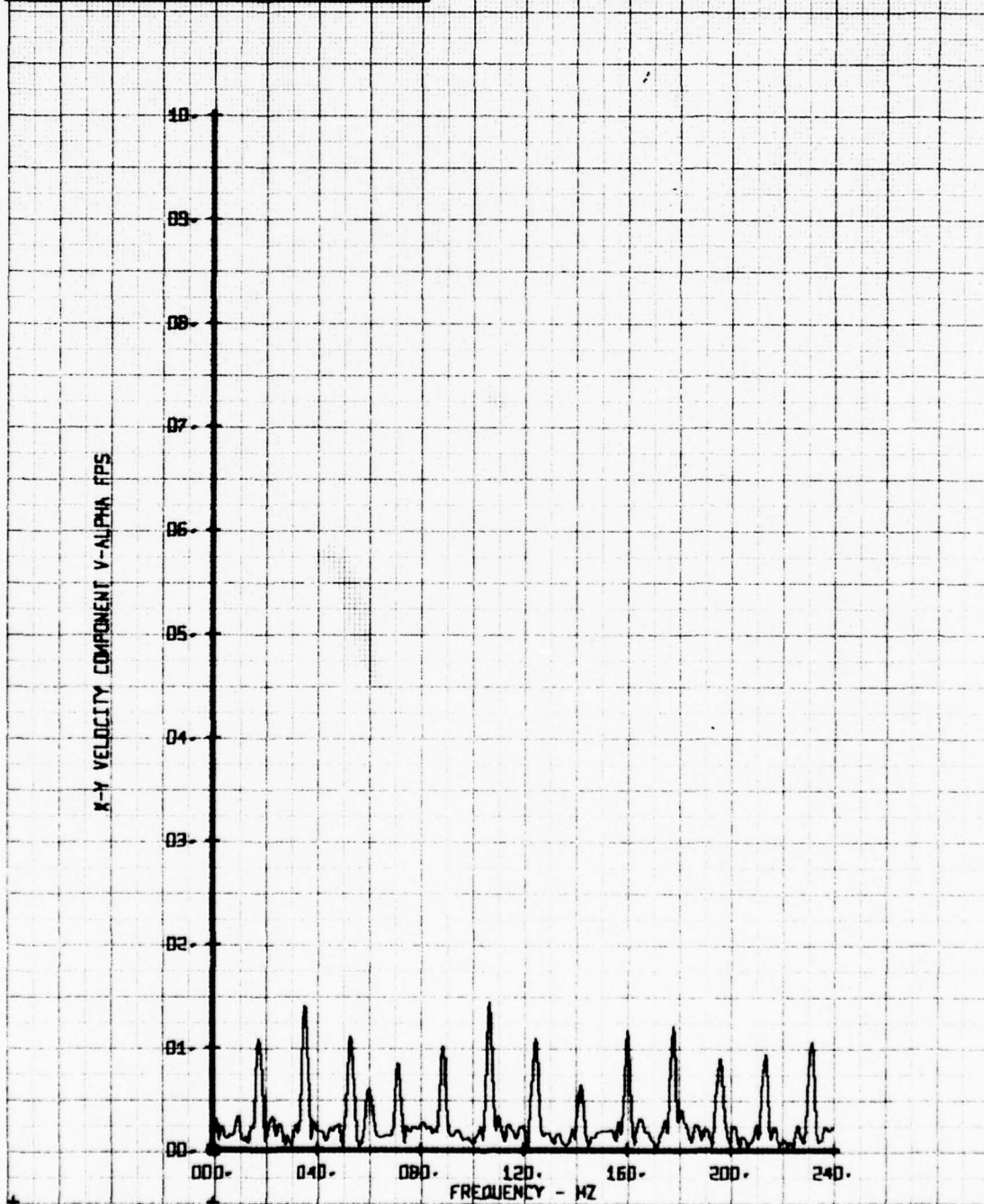
CH PARAMETER
 66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



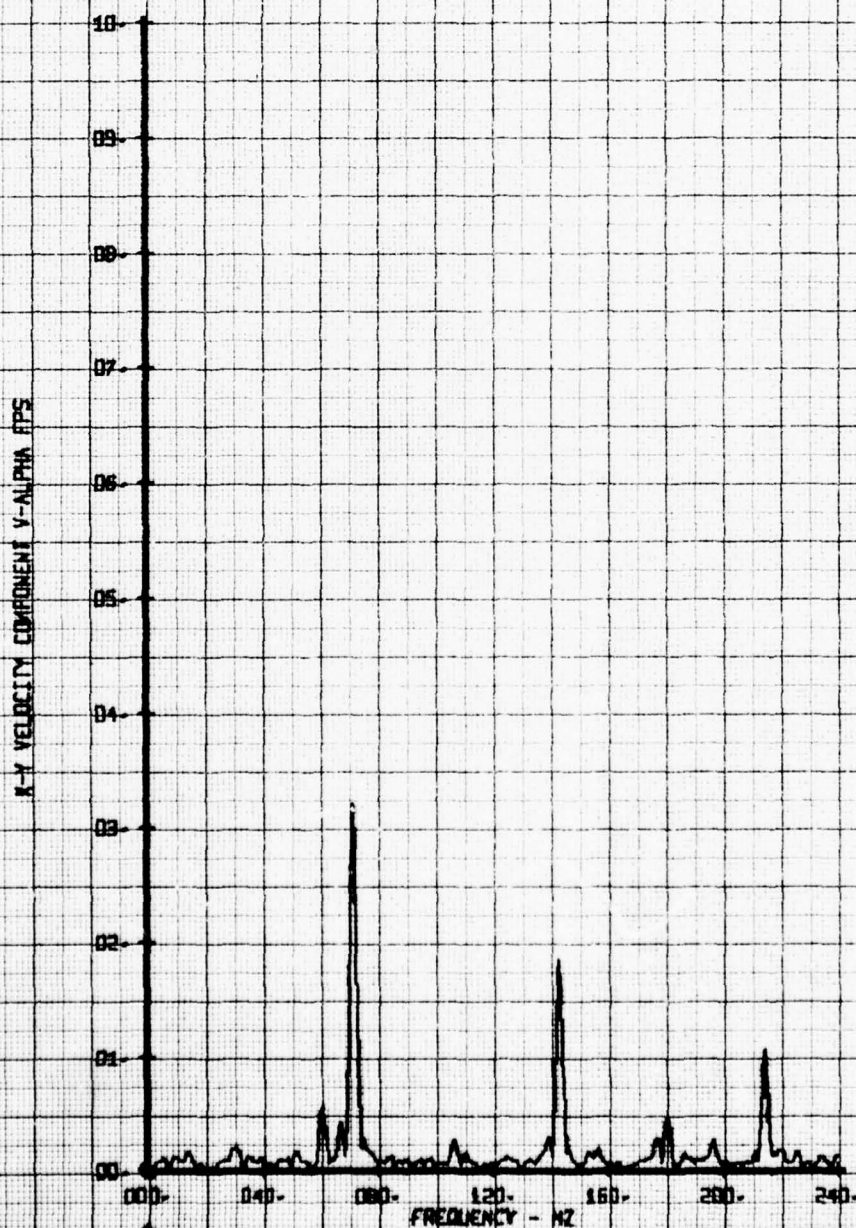
HOT FILM WAKE FREQUENCY ANALYSIS
 MISC. HUB CYRS 160 FAIRING
 RUN 151 TP 9

LEGEND
 CH PARAMETER
 66 V-ALPHA



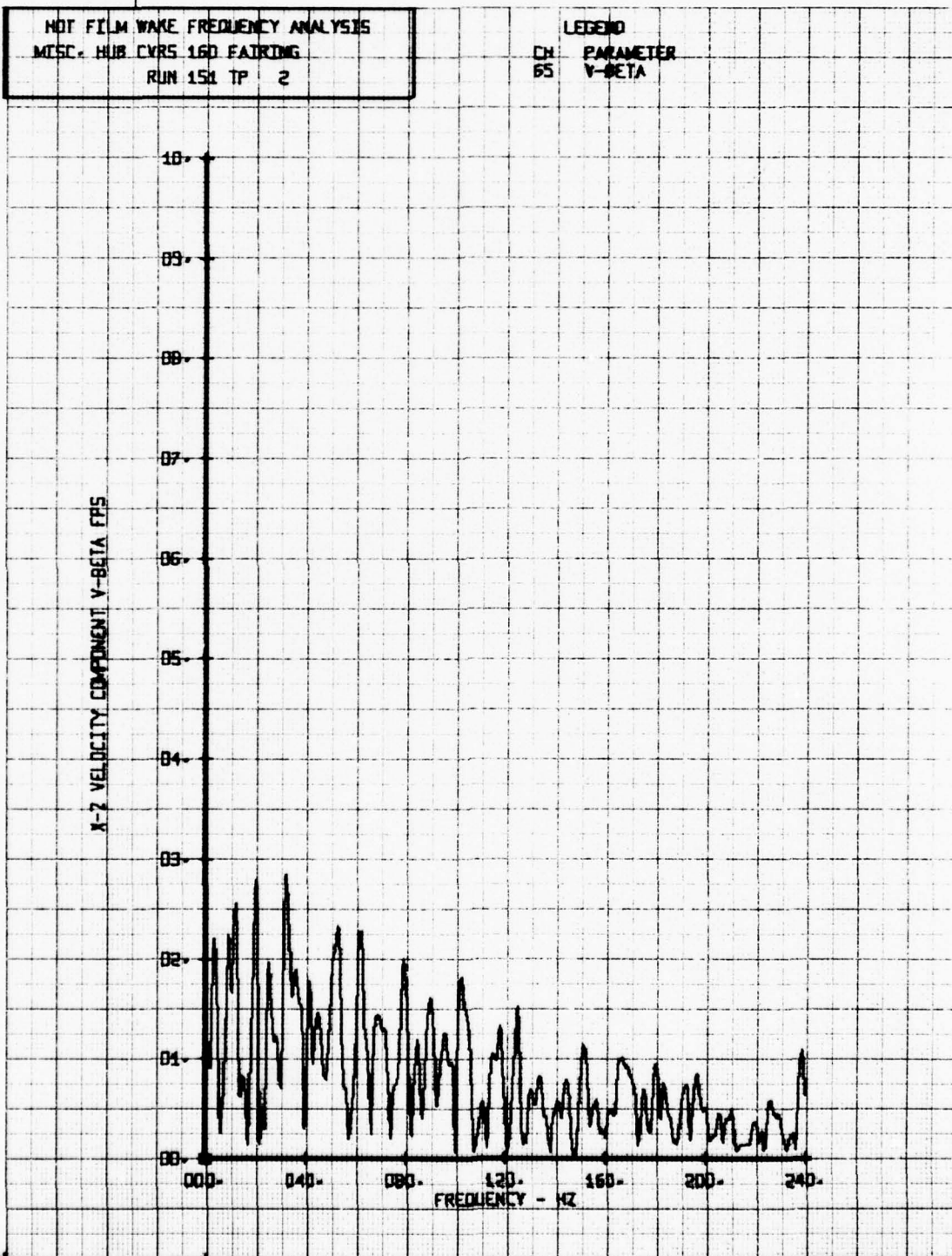
HOT FILM WAKE FREQUENCY ANALYSIS
MSC- HUB CVRS 160 FAIRING
RUN 151 TP 10

LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MESC. HUB CVRS 160 FAIRING
RUN 151 TP 2

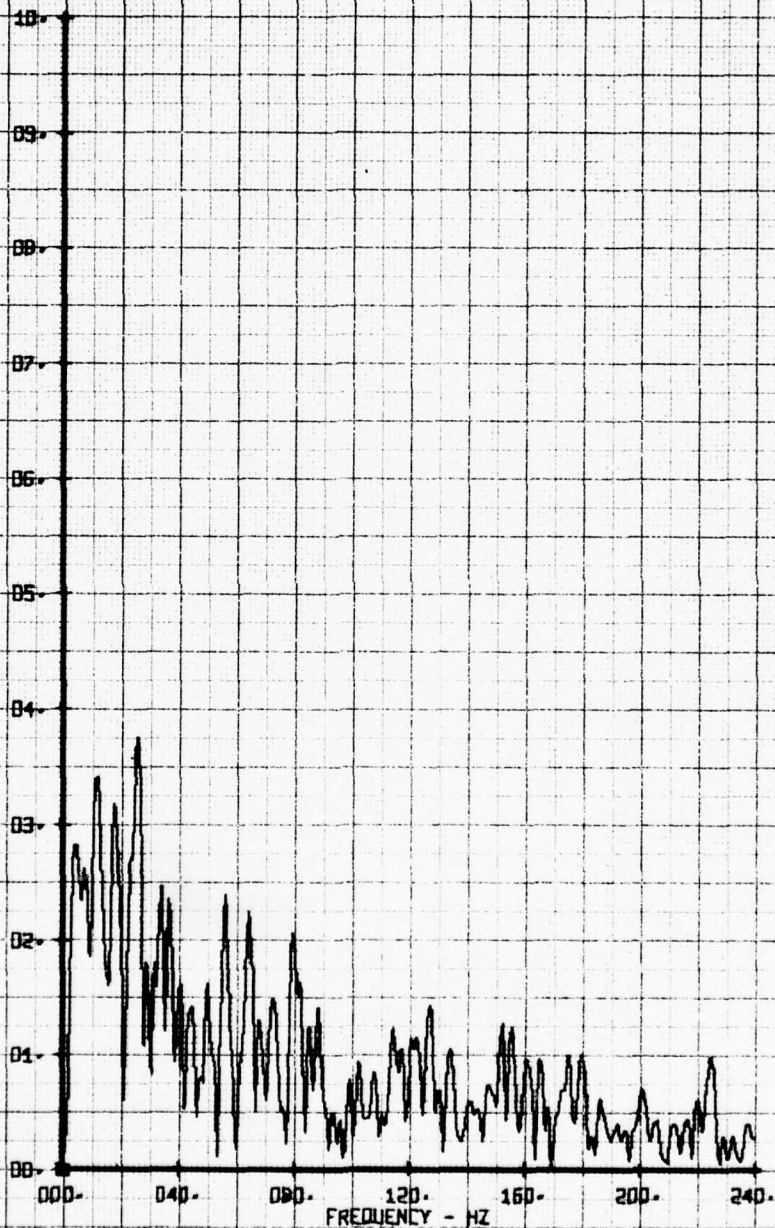
LEGEND
CH PARAMETER
65 V-BETA



NOT FILM WAKE FREQUENCY ANALYSIS
MSC. HUB CYRS 160 FAIRING
RUN 151 TP 3

LEGEND
CH PARAMETER
BS Y-BETA

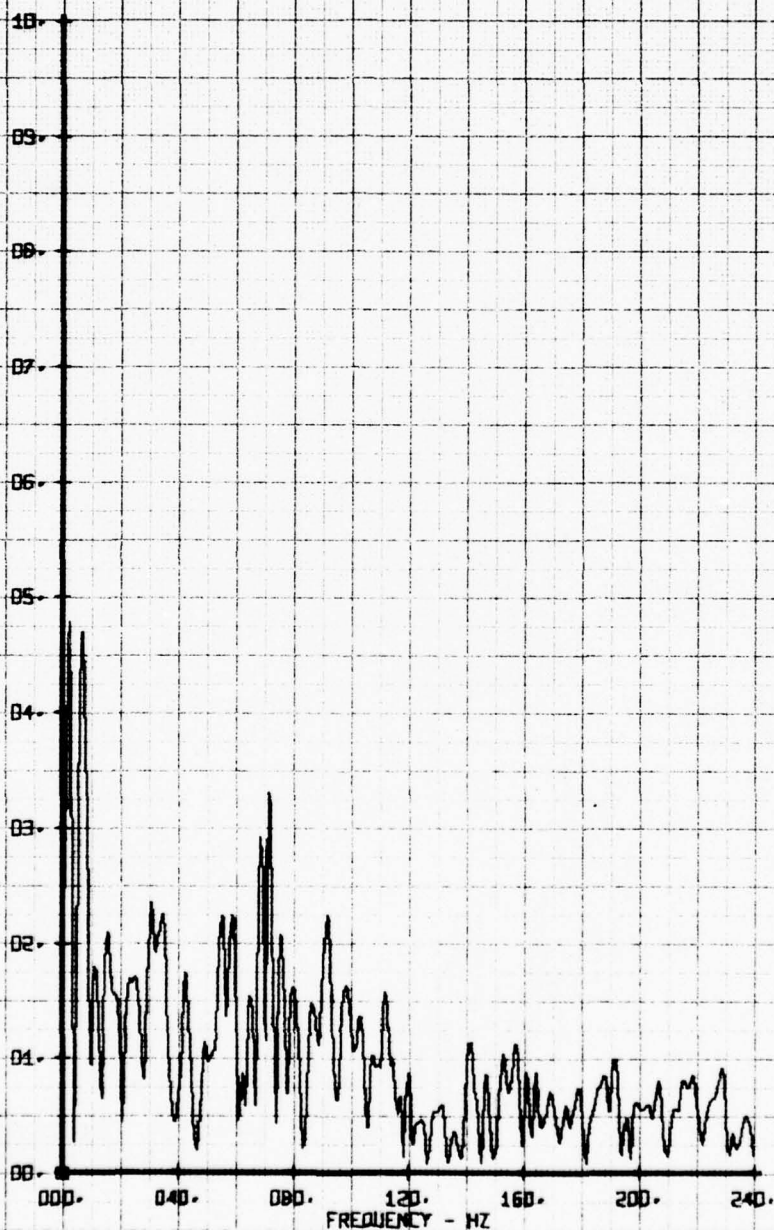
X-Z VELOCITY COMPONENT Y-BETA FFS



NOI FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS 160 FAIRING
RUN 151 TP 4

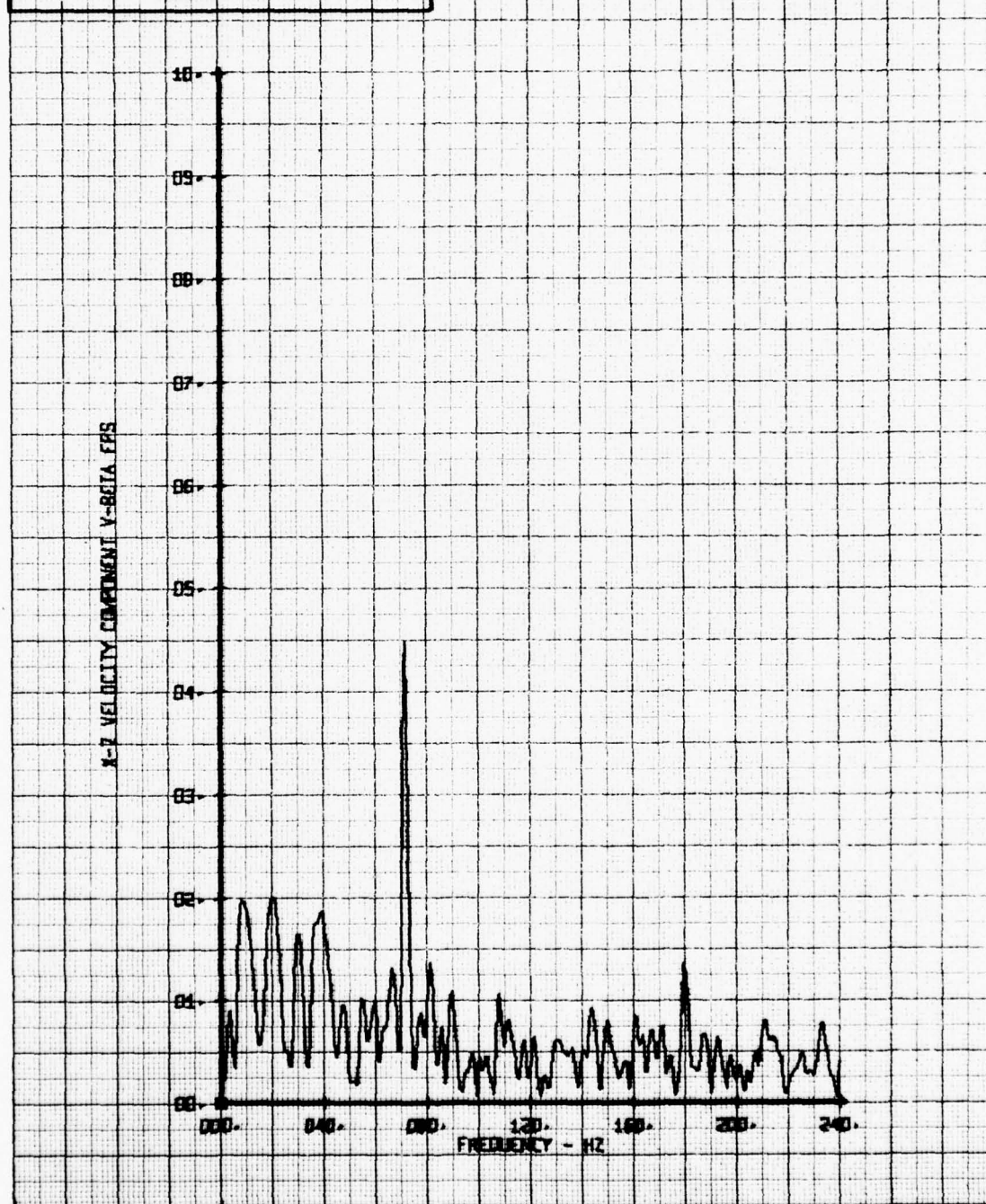
LEGEND
CH PARAMETER
65 V-BETA

X-2 VELOCITY COMPONENT V-BETA FHS



NOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS 160 FAIRING
RUN 151 TP 5

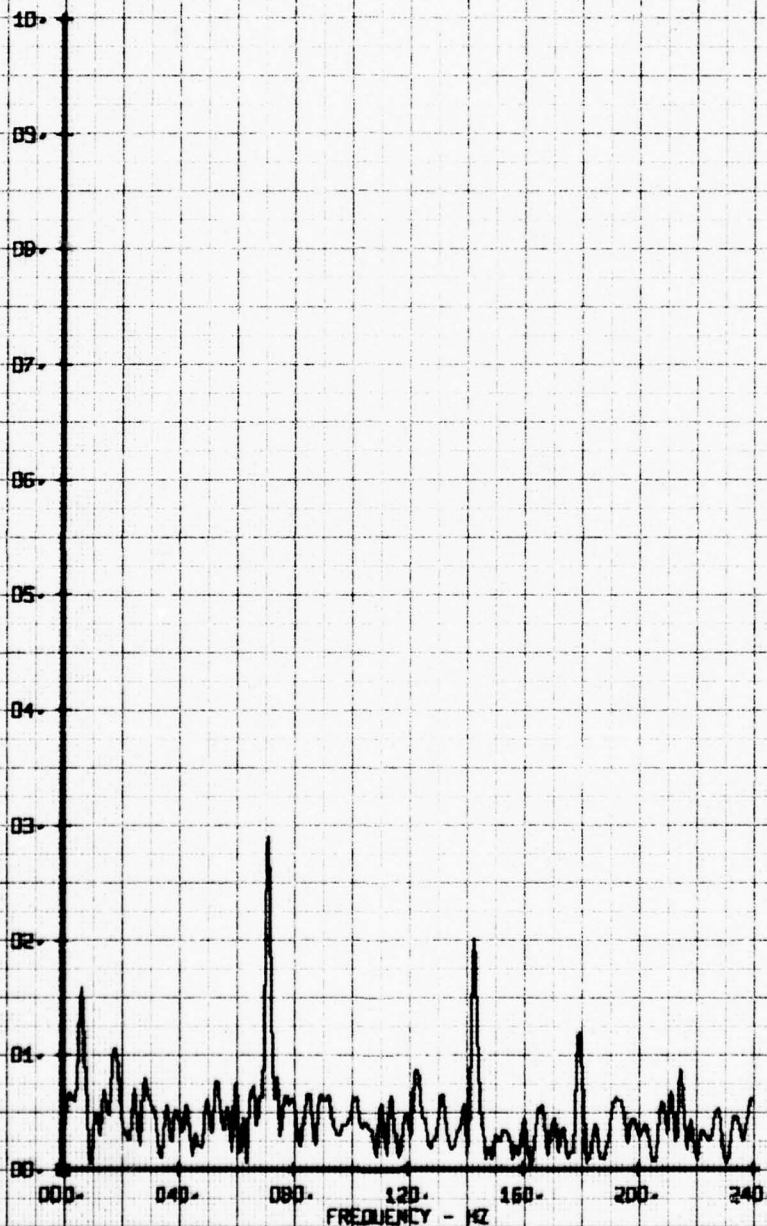
LEGEND
CH PARAMETER
65 V-BETA



HOT FILM WAKE FREQUENCY ANALYSIS
MSC. HUB CVBS 160 FAIRING
RUN 151 TP 6

LEGEND
CH PARAMETER
65 V-BETA

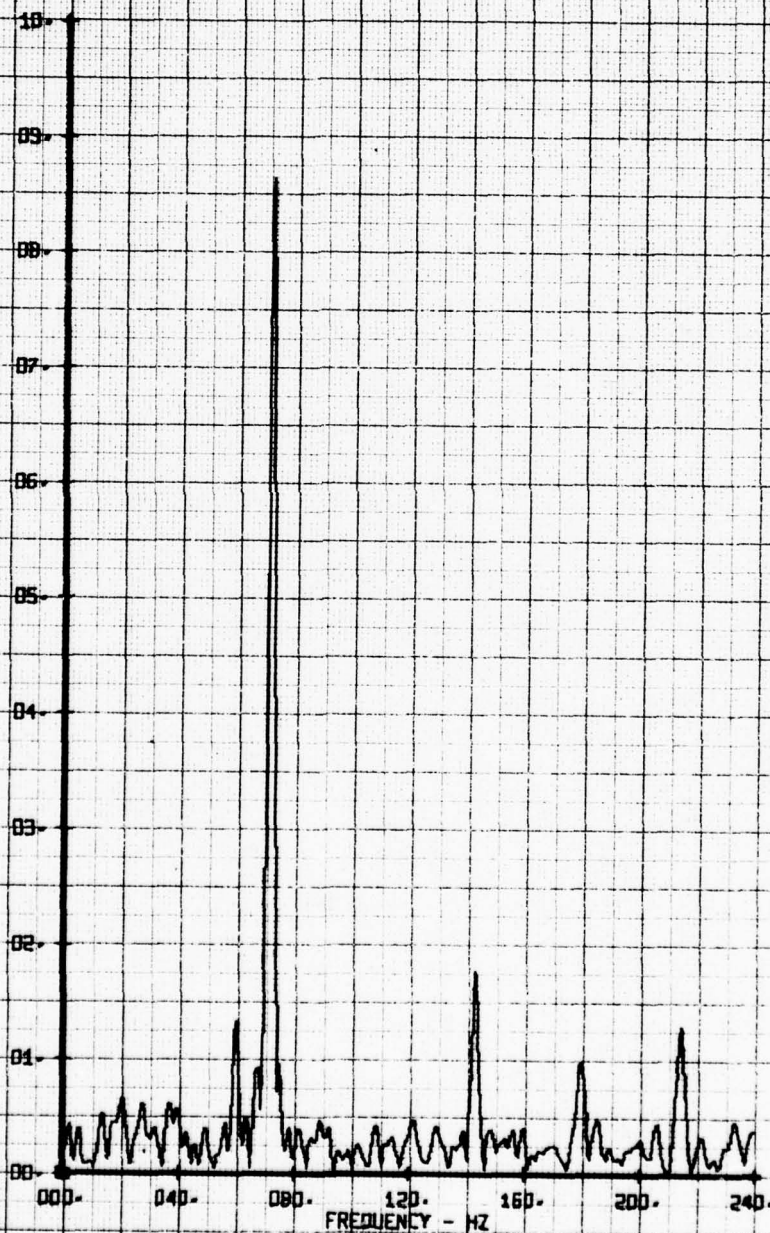
X-2 VELOCITY COMPONENT V-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
MSC. HUB CYRS 160 FATRONG
RUN 151 TP 7

LEGEND
CH PARAMETER
BS V-BETA

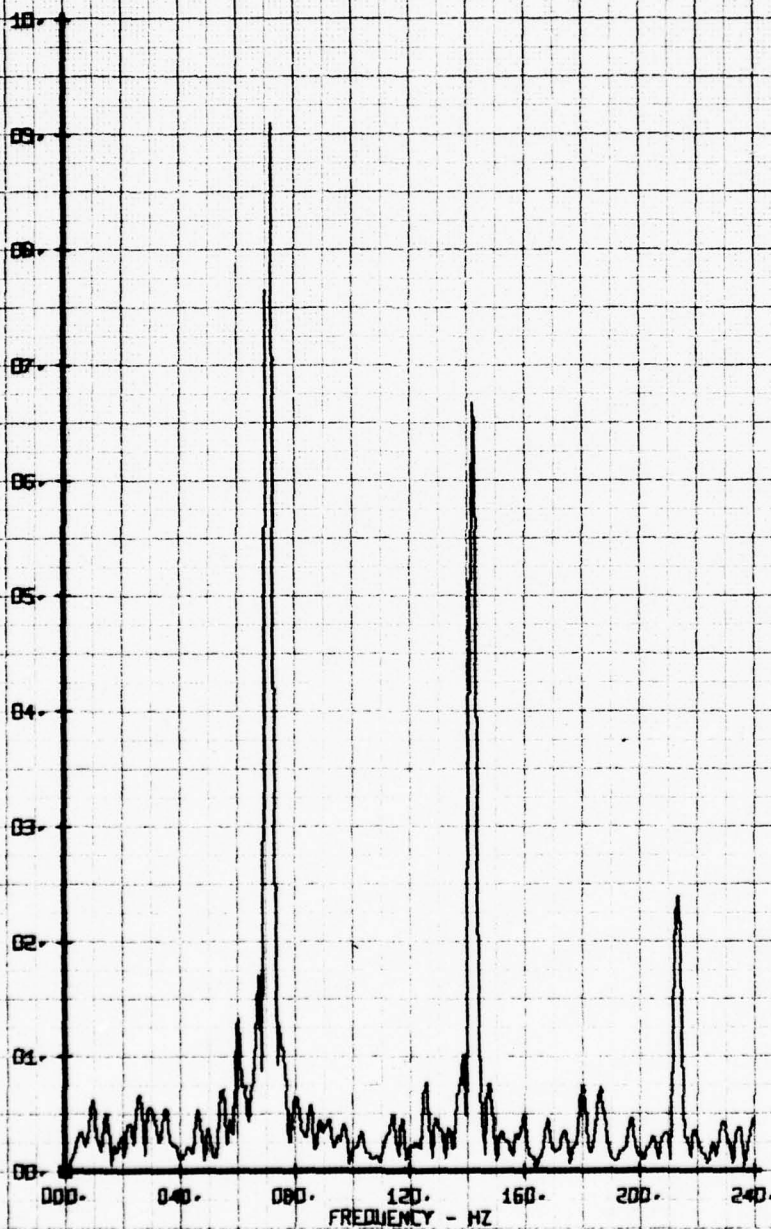
A-2 VELOCITY COMPONENT V-BETA FHS



HOT FILM WAKE FREQUENCY ANALYSIS
 MISC. HUB CYRS 160 EATRNG
 RUN 151 TP 0

LEGEND
 CH PARAMETER
 65 V-BETA

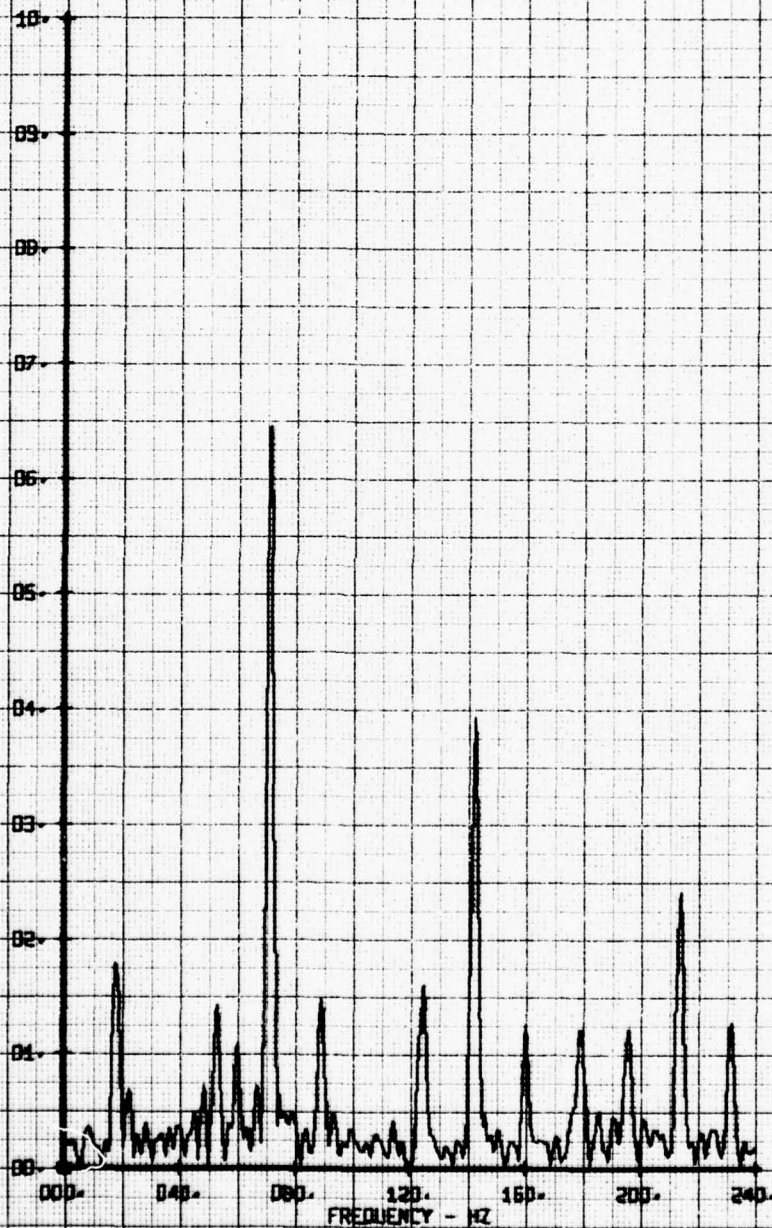
X-2 VELOCITY COMPONENT V-BETA FBS



NOI FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 EATING
RUN 151 TP 9

LEGEND
CH PARAMETER
65 Y-BETA

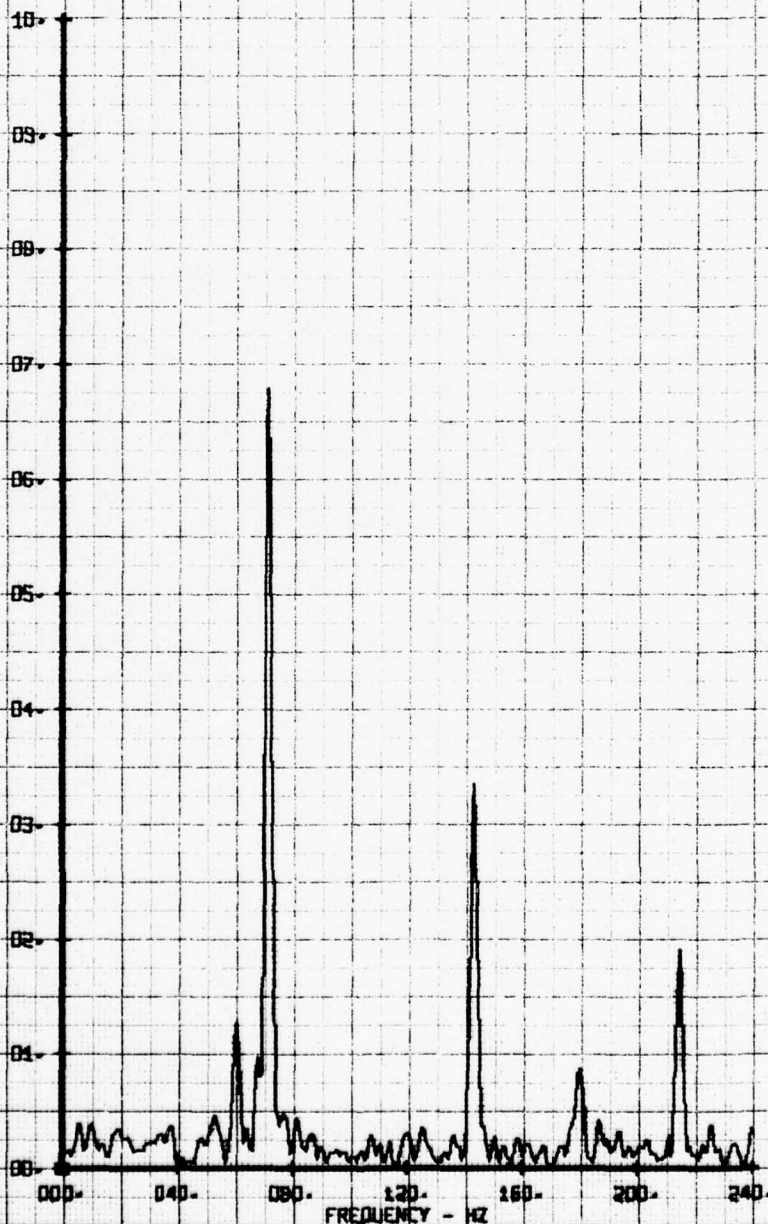
X-2 VELOCITY COMPONENT Y-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS 160 FAIRING
RUN 151 TP 10

LEGEND
CH 65
PARAMETER
V-BETA

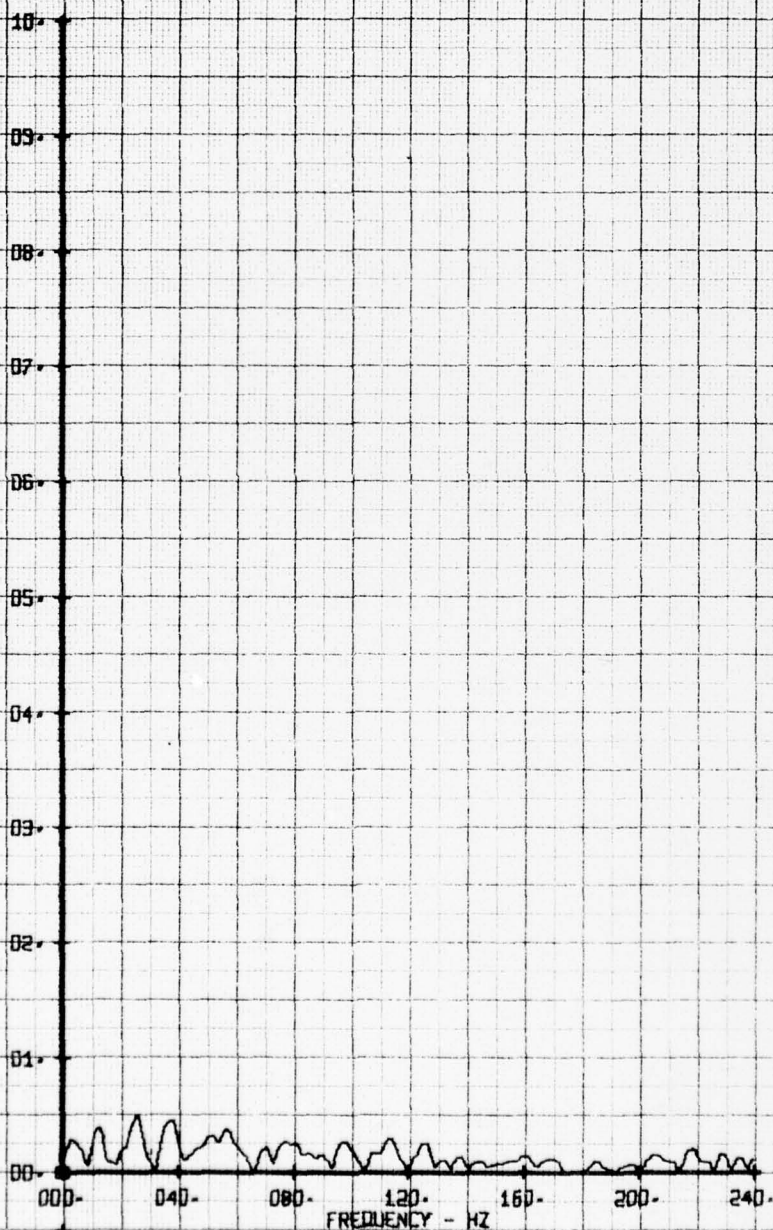
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WIND-O-FLYER 100
RUN 182 TP 2

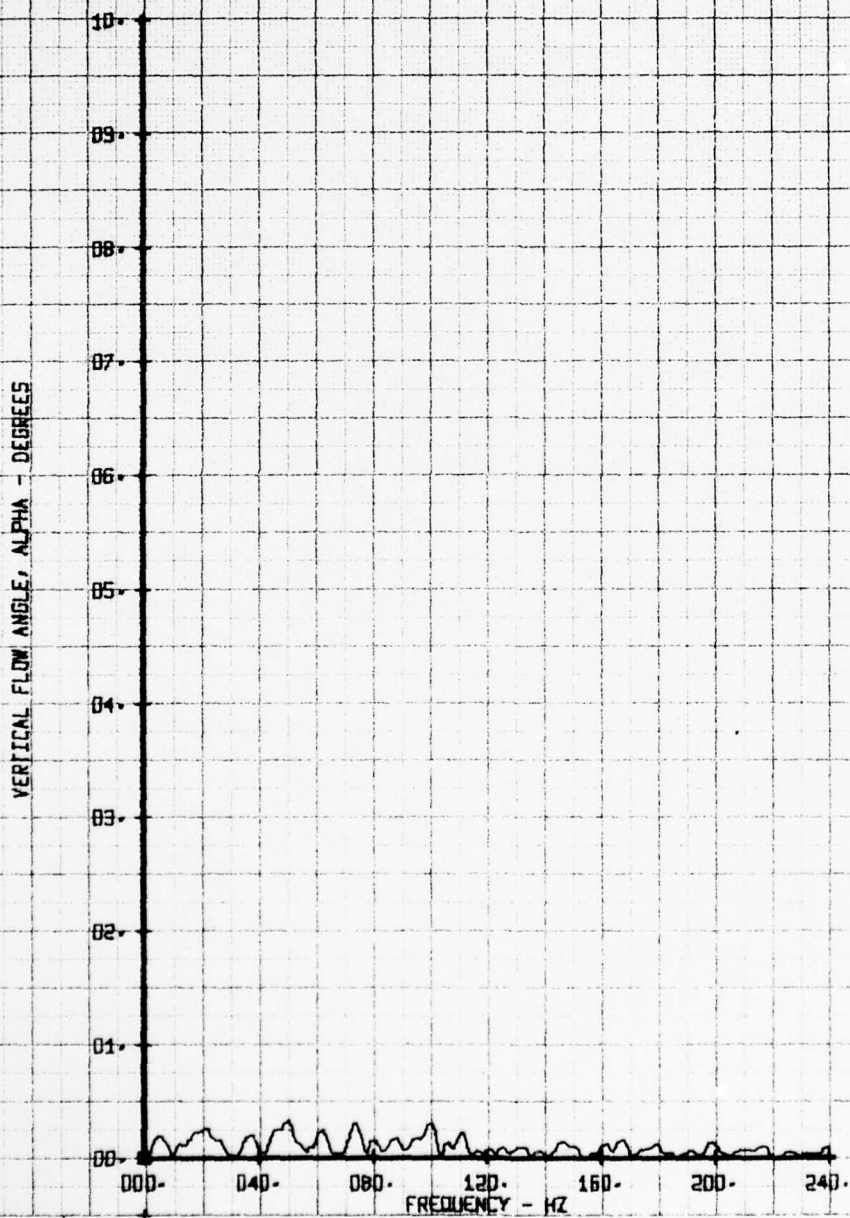
LEGEND
CH 56 PARAMETER
56 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



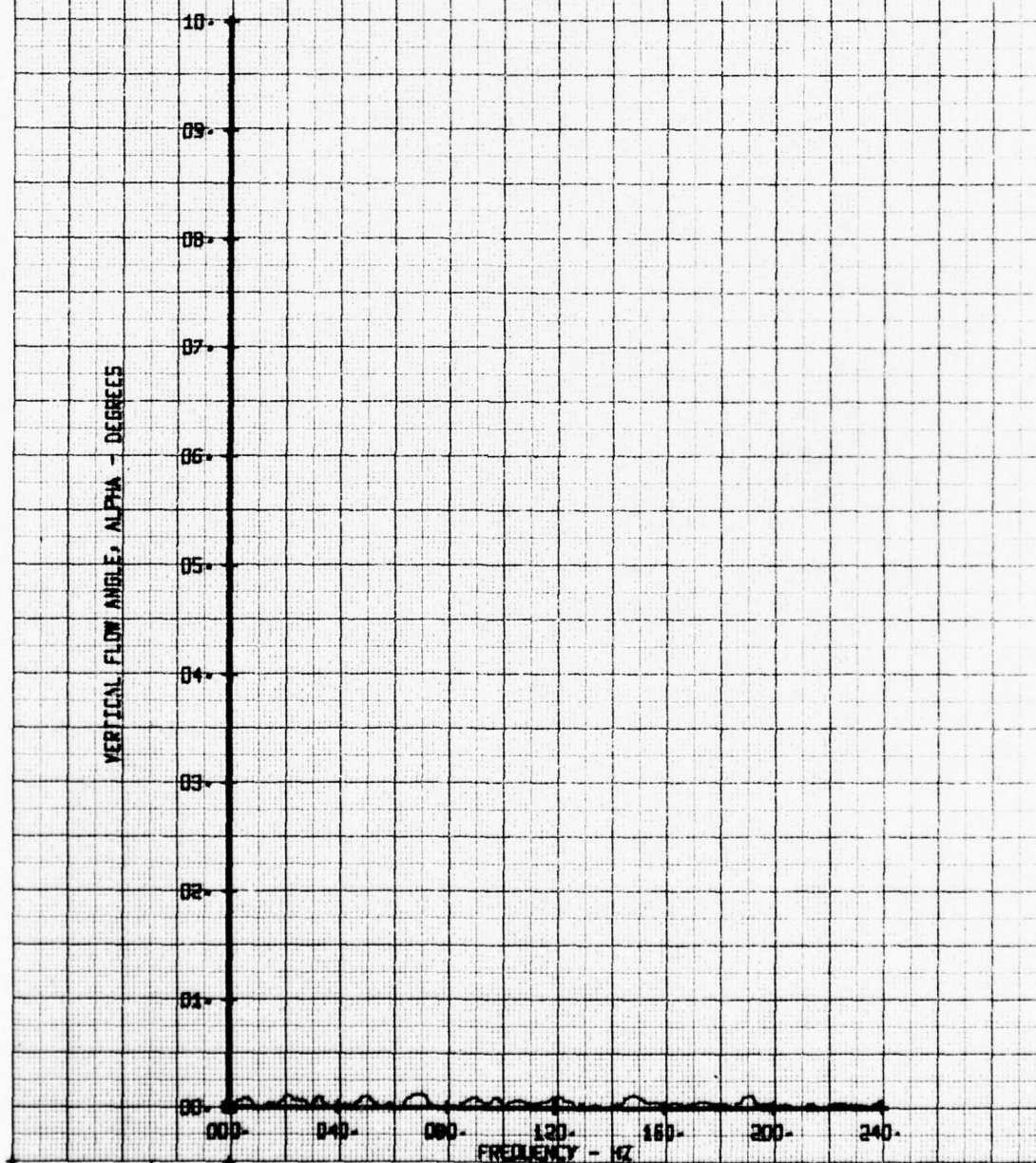
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-ERTSSEE 100
RUN 182 TP 3

LEGEND
CH 66 PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WMAN-D-FRTSBE 100
RUN 182 TP 4

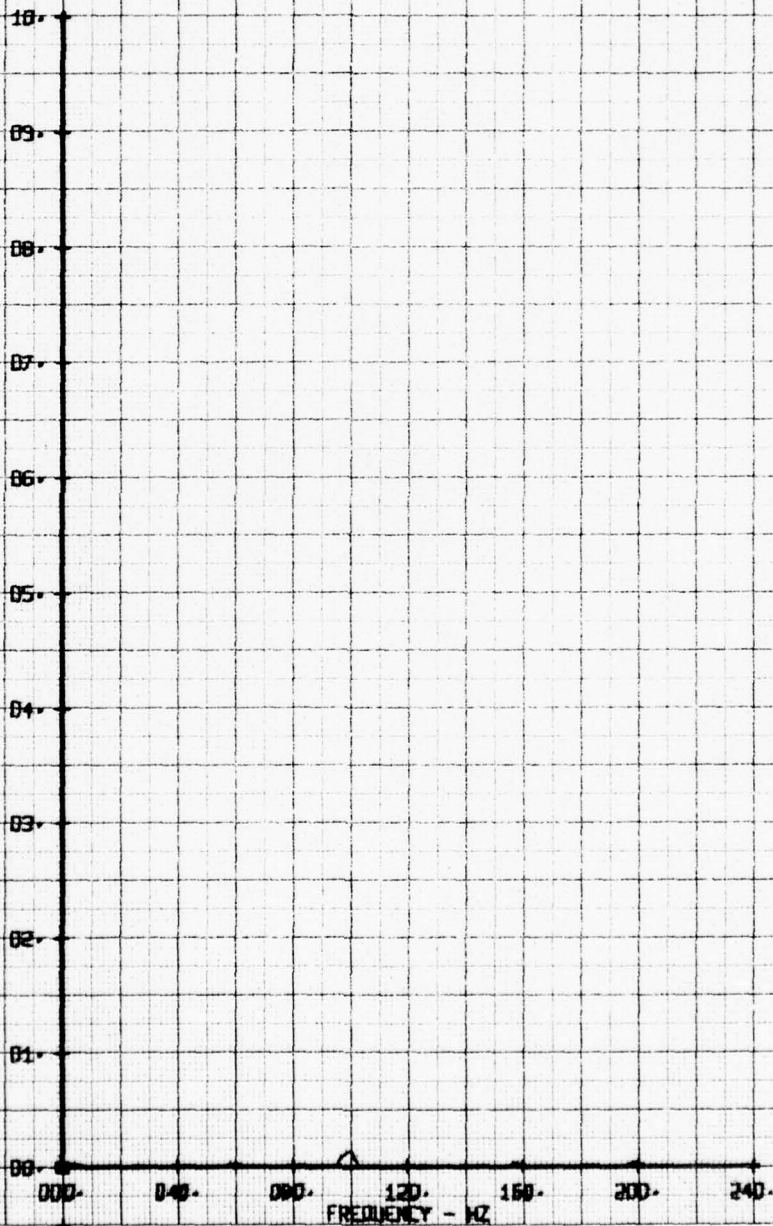
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS WHAM-0-FRISBEE 100
RUN 1B2 TP 5

LEGEND
CH 66 PARAMETER
ALPHA

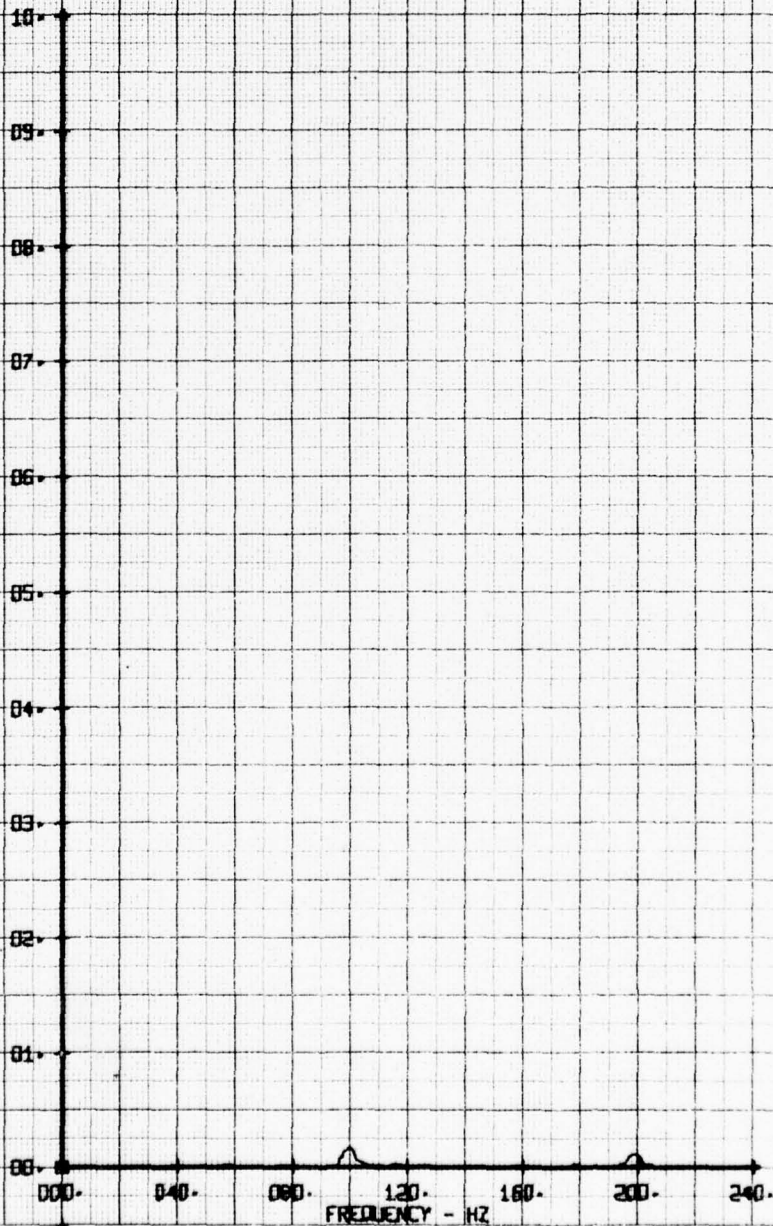
VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WARE FREQUENCY ANALYSIS
MISC. HUB CYRS WHAM-O-FRISBEE 100
RUN 182 TP 6

LEGEND
CH PARAMETER
66 ALPHA

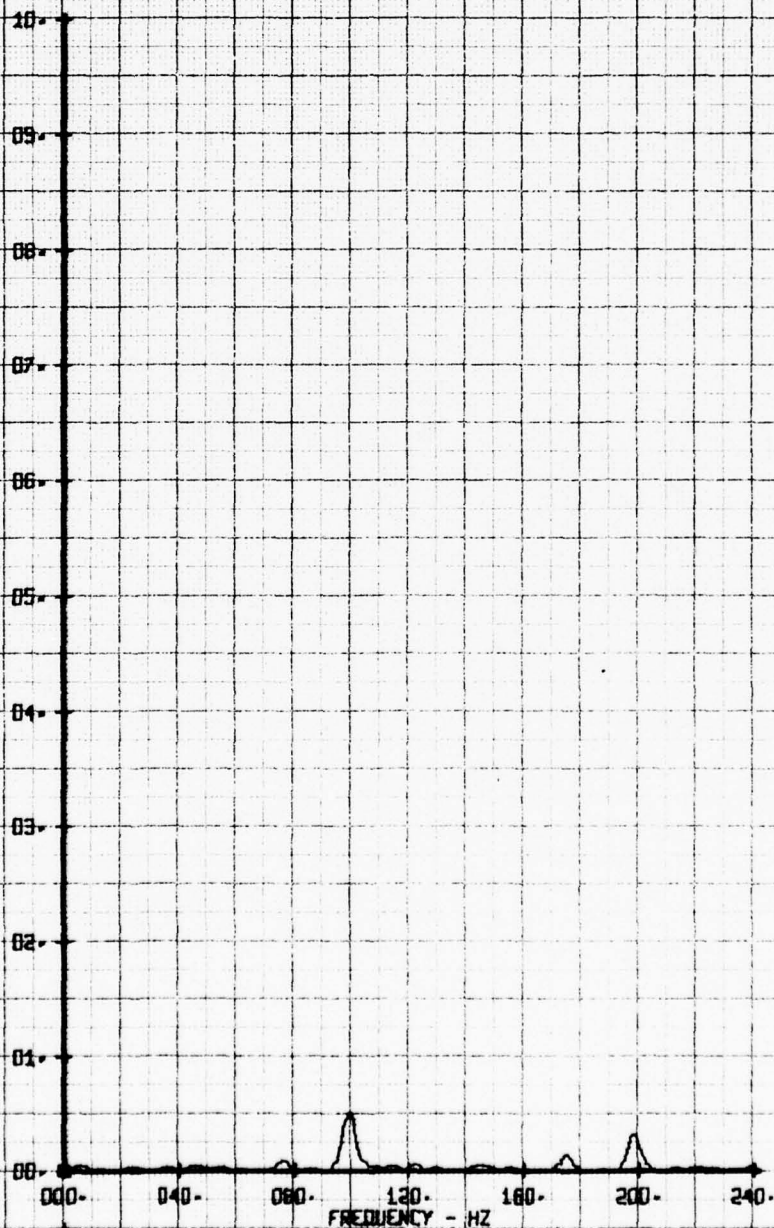
VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS. W/AM-D-ERTSSEE 100
RUN 182 TP 7

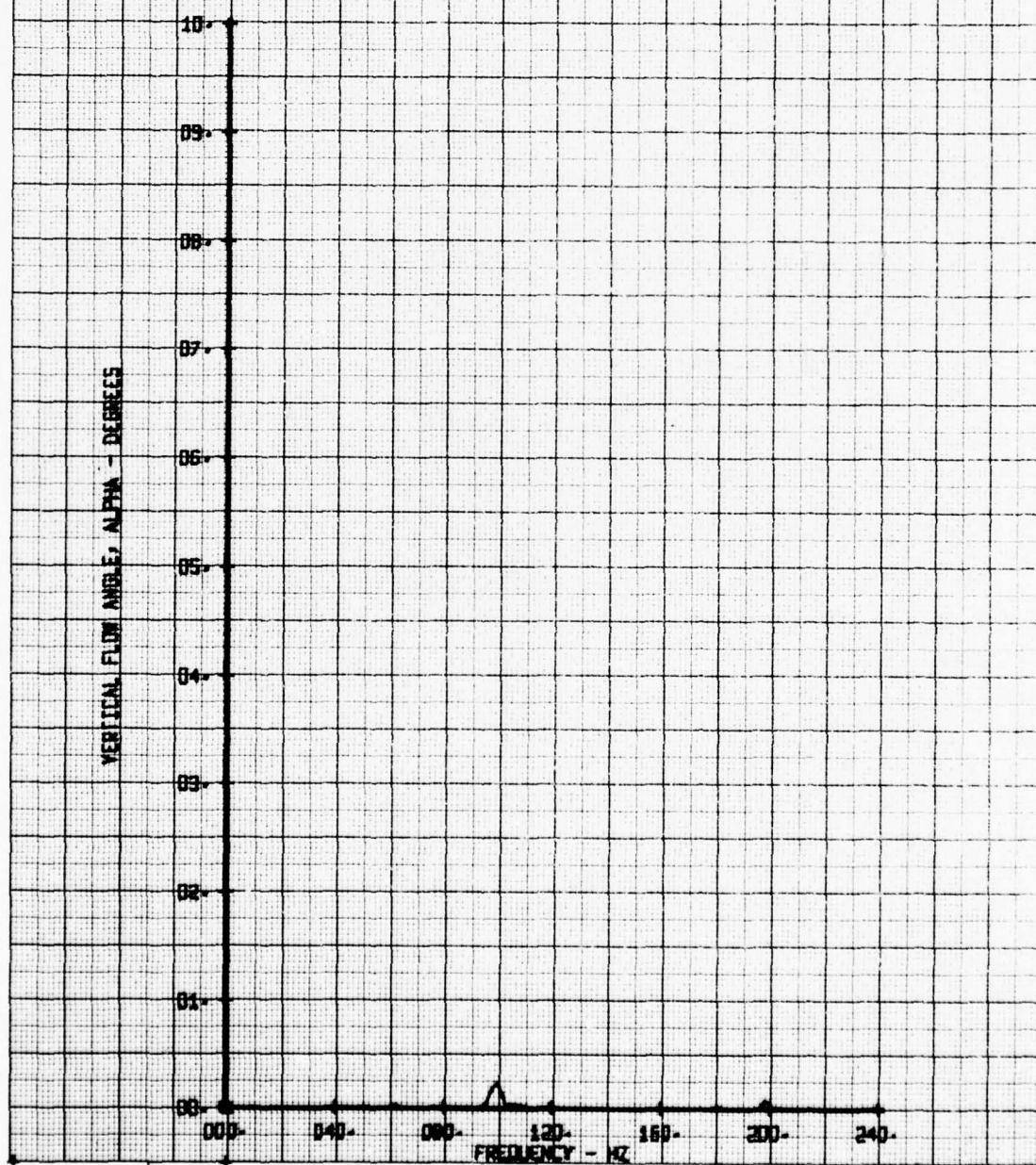
LEGEND
CH 66
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



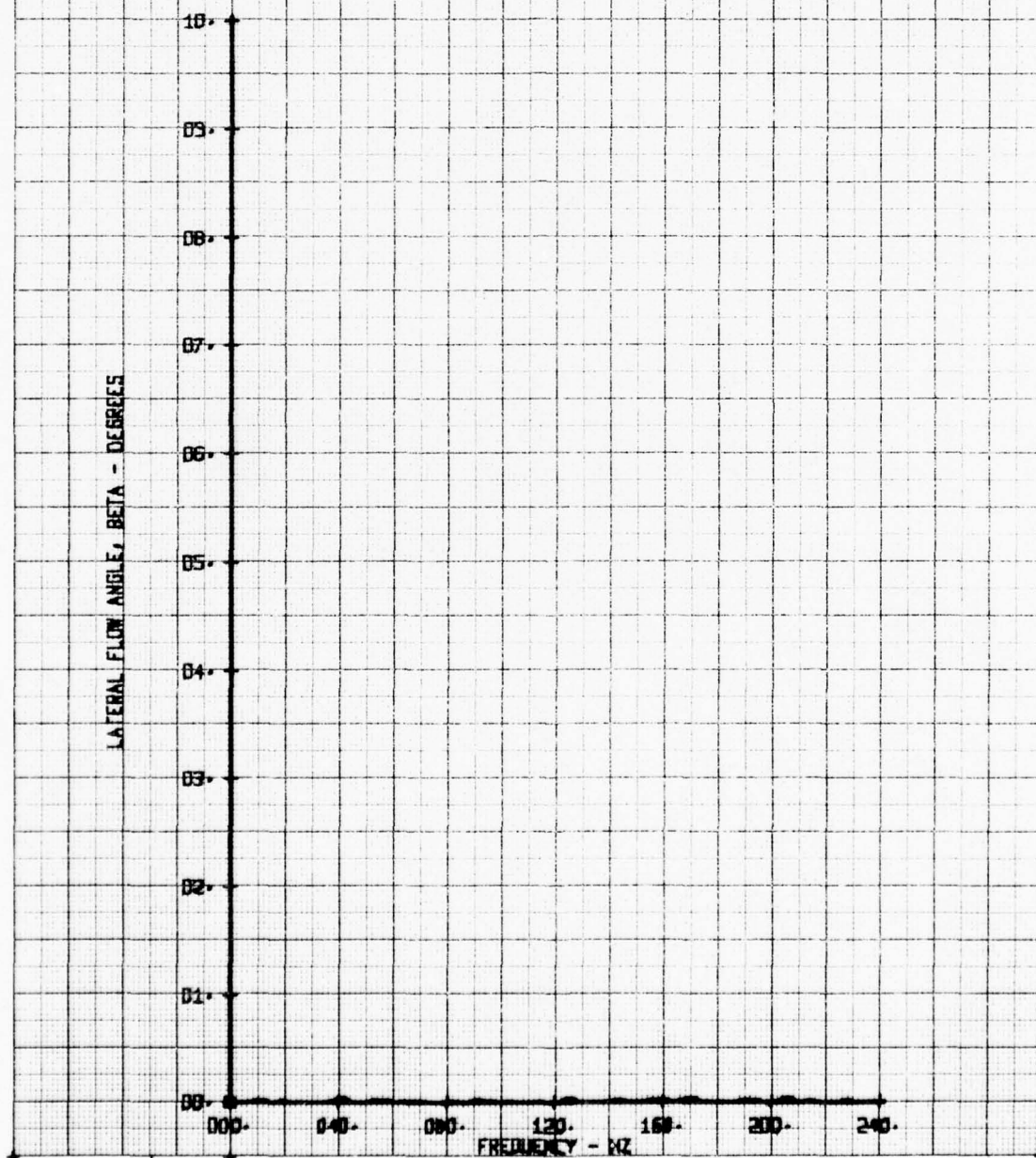
HOT FILM WIRE FREQUENCY ANALYSIS
MISC. HUB CURS WMAN-D-ERTSREE 100
RUN 102 TP 8

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FRISBEE 100
RUN 182 TP 2

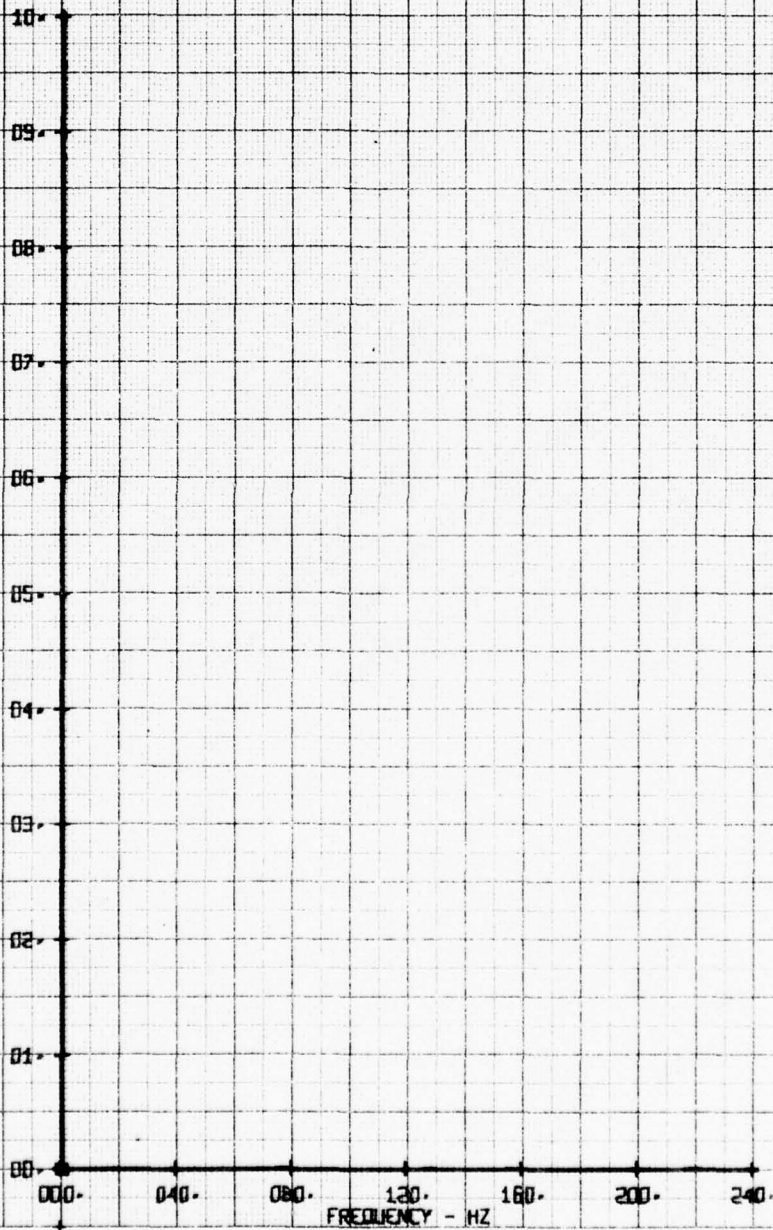
LEGEND
CH 65 PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS WHAM-O FRISBEE 100
RUN 182 TP 3

LEGEND
CH PARAMETER
65 BETA

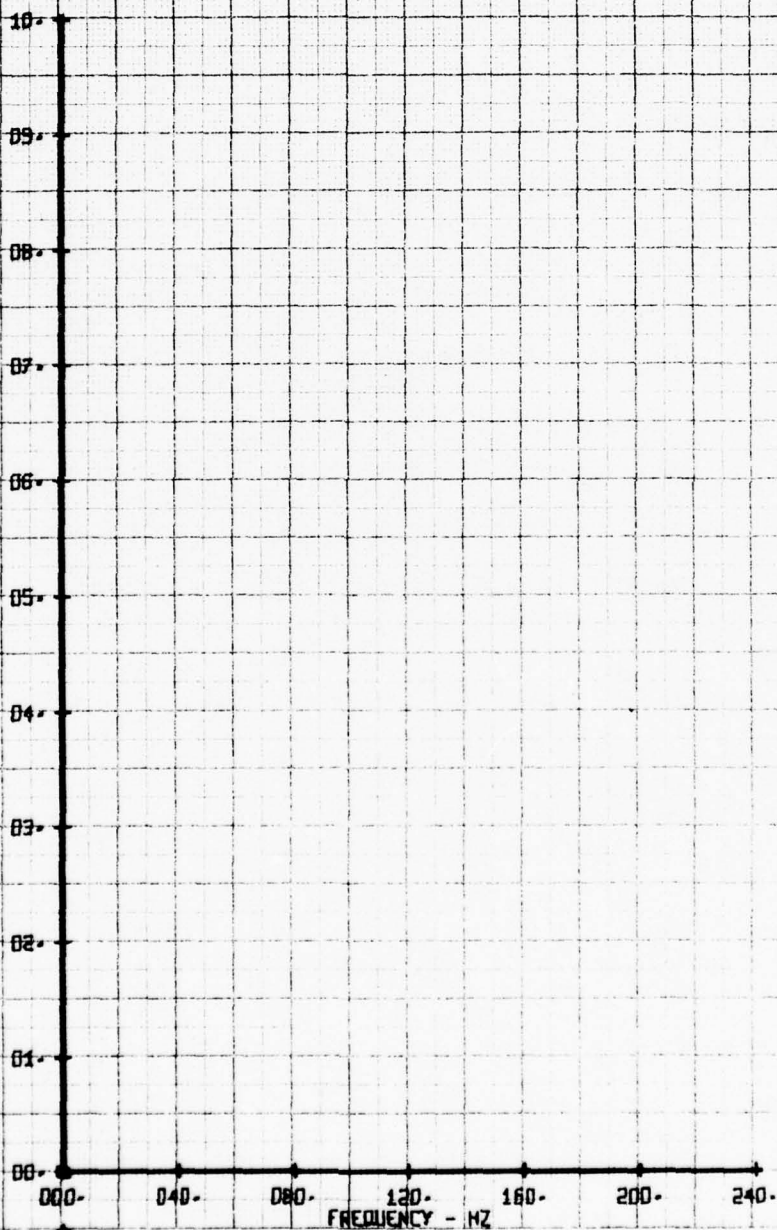
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS WHAM-D-FRISBEE 100
RUN 182 TP 4

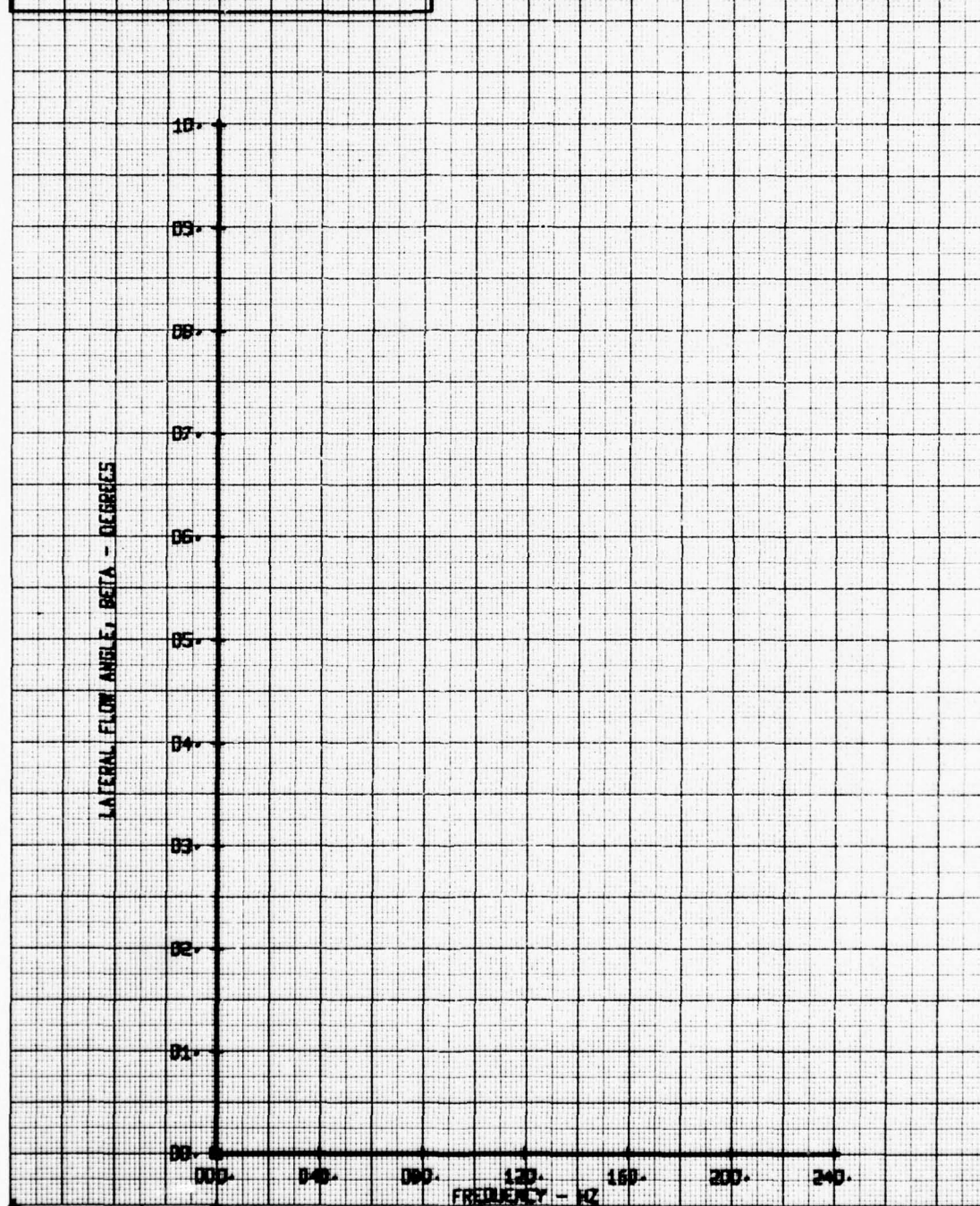
LEGEND
CH 65
PARAMETER
BETA

LATERAL FLOW ANGLE, BETA - DEGREES



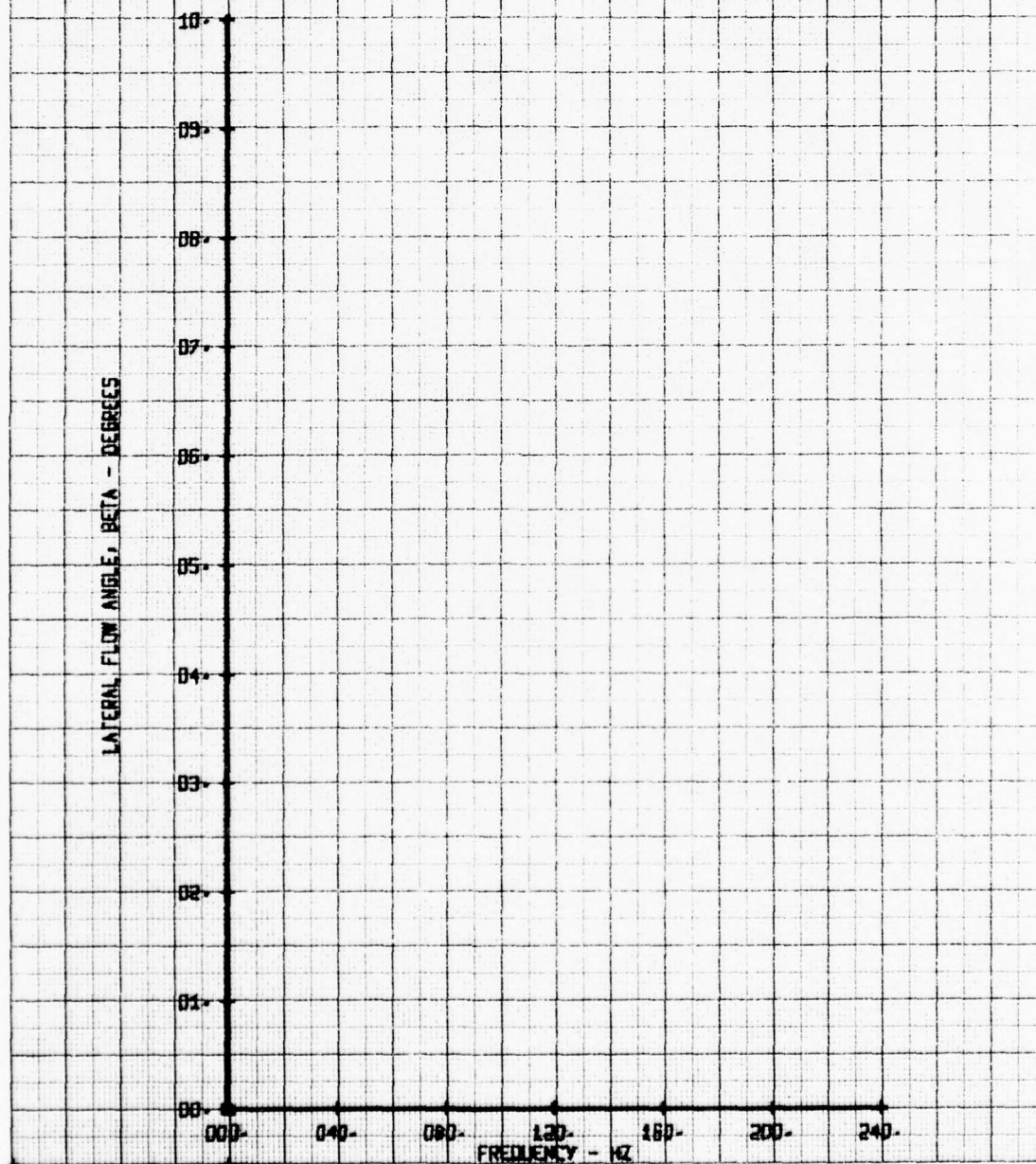
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-ERISBEE 100
RUN 182 TP 5

LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FLISBEE 100
RUN 182 TP 6

LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS WMA-0-ERISBEE 100
RUN 192 TP 7

LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES

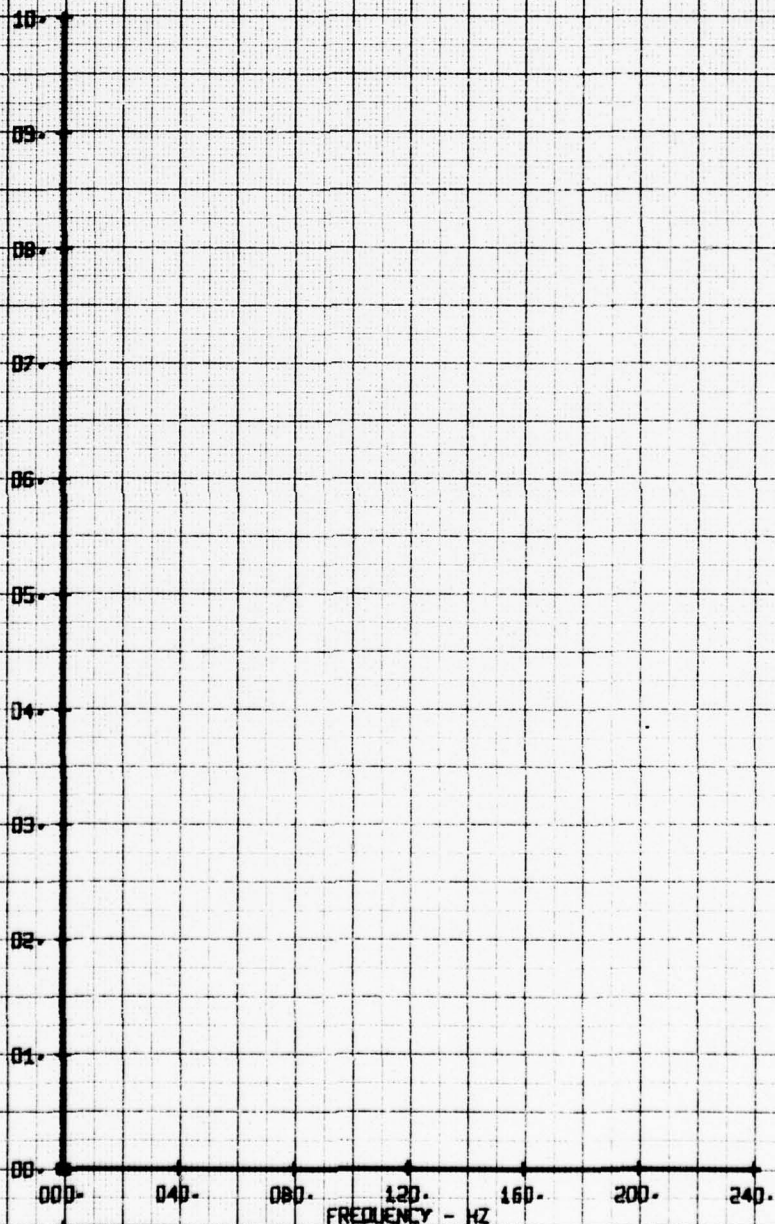
18.
09.
08.
07.
06.
05.
04.
03.
02.
01.
00.

000. 040. 080. 120. 160. 200. 240.
FREQUENCY - HZ

HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS MMAN-O-PRISSEE 100
RUN 102 TP 2

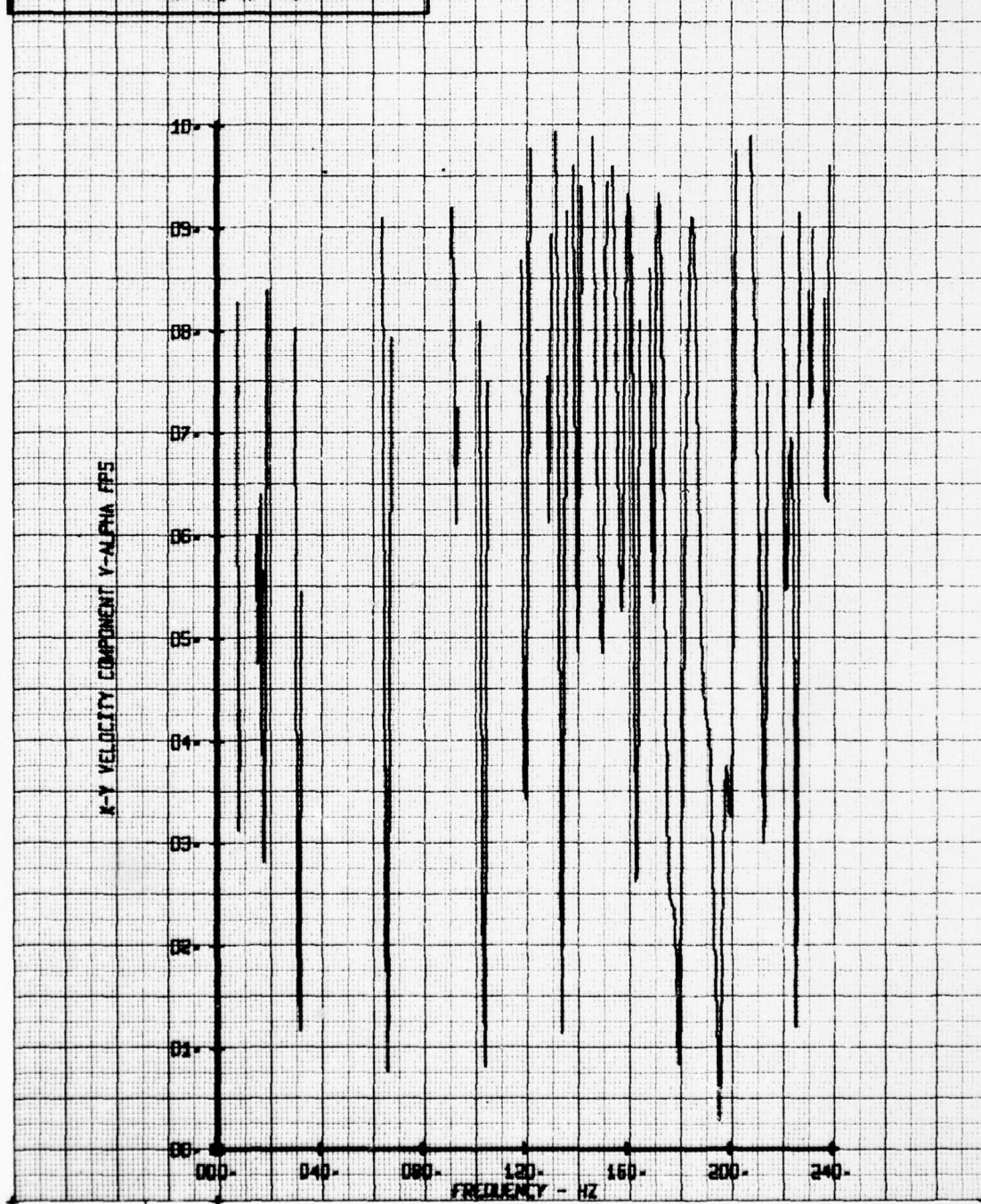
LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



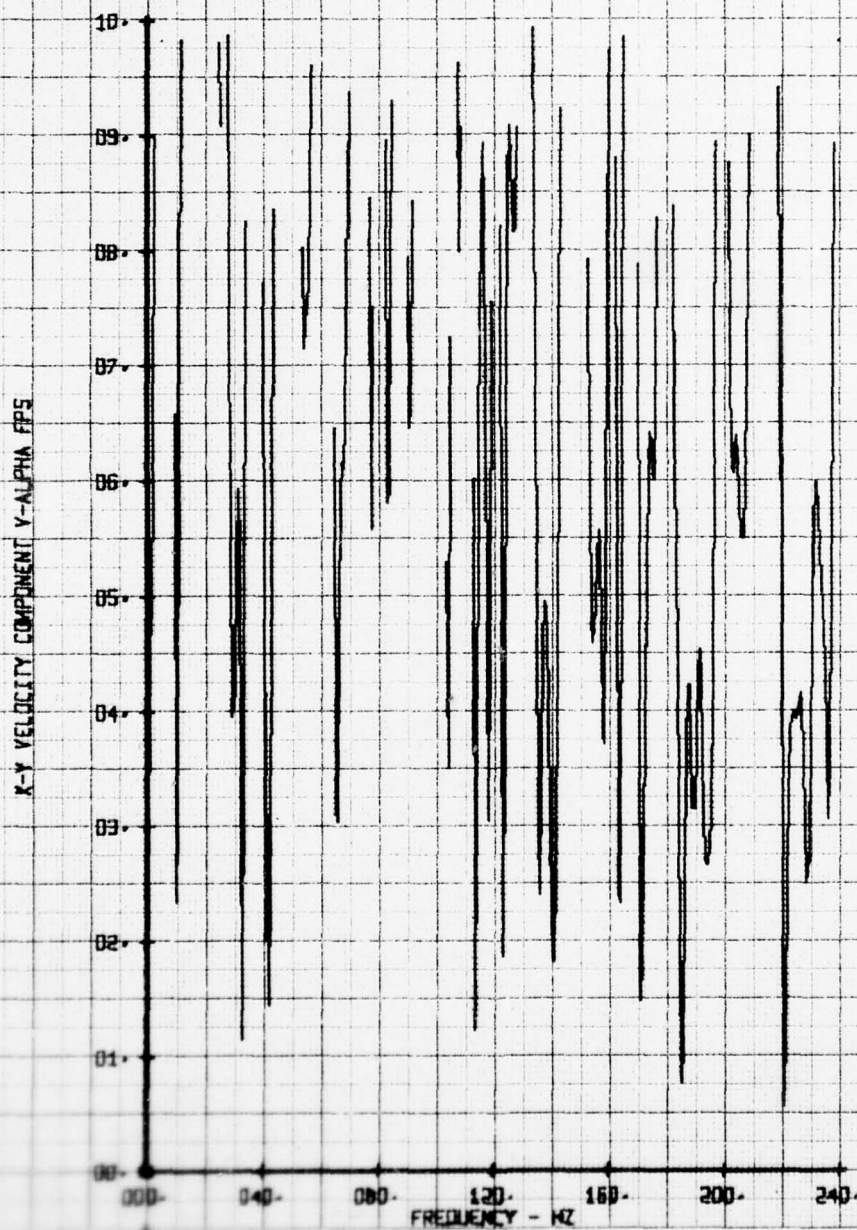
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FRISBEE 100
RUN 182 TP 2

LEGEND
CH 56 PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FRISBEE 100
RUN 182 TP 3

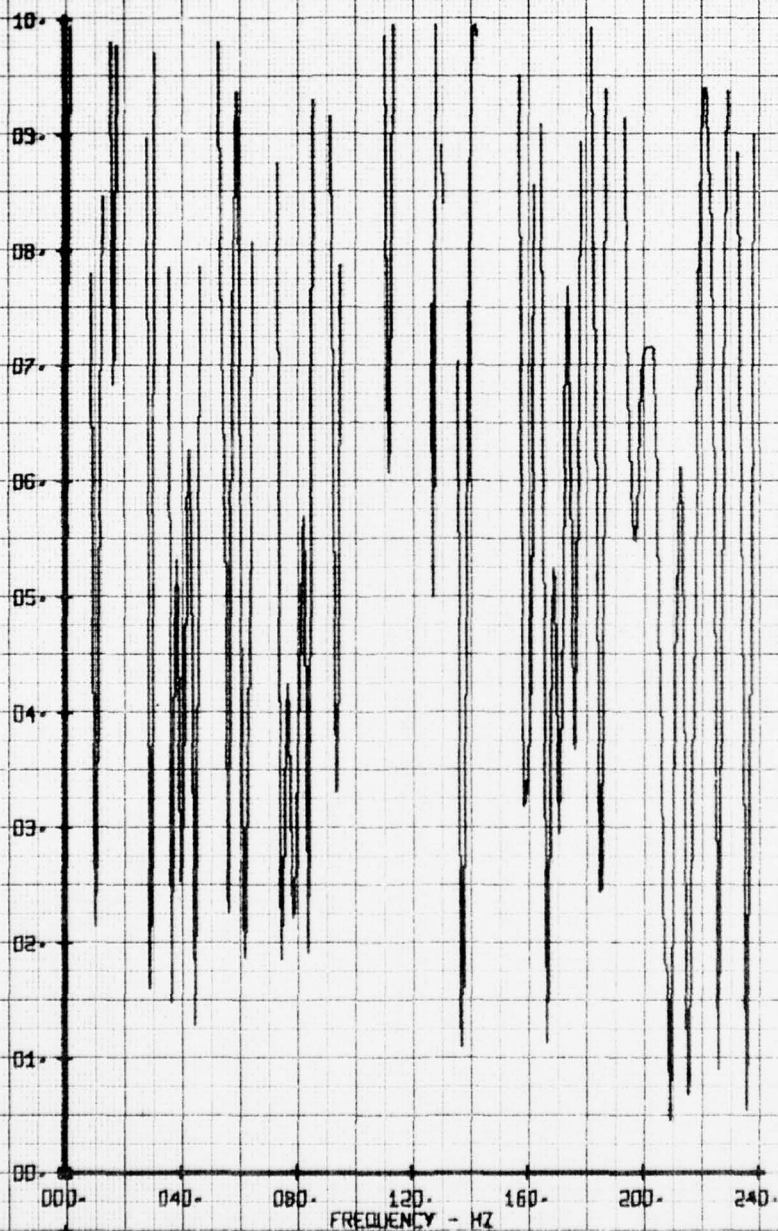
LEGEND
CH 66 PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-D-FRISBEE 100
RUN 182 TP 4

LEGEND
CH 56 PARAMETER
V-ALPHA

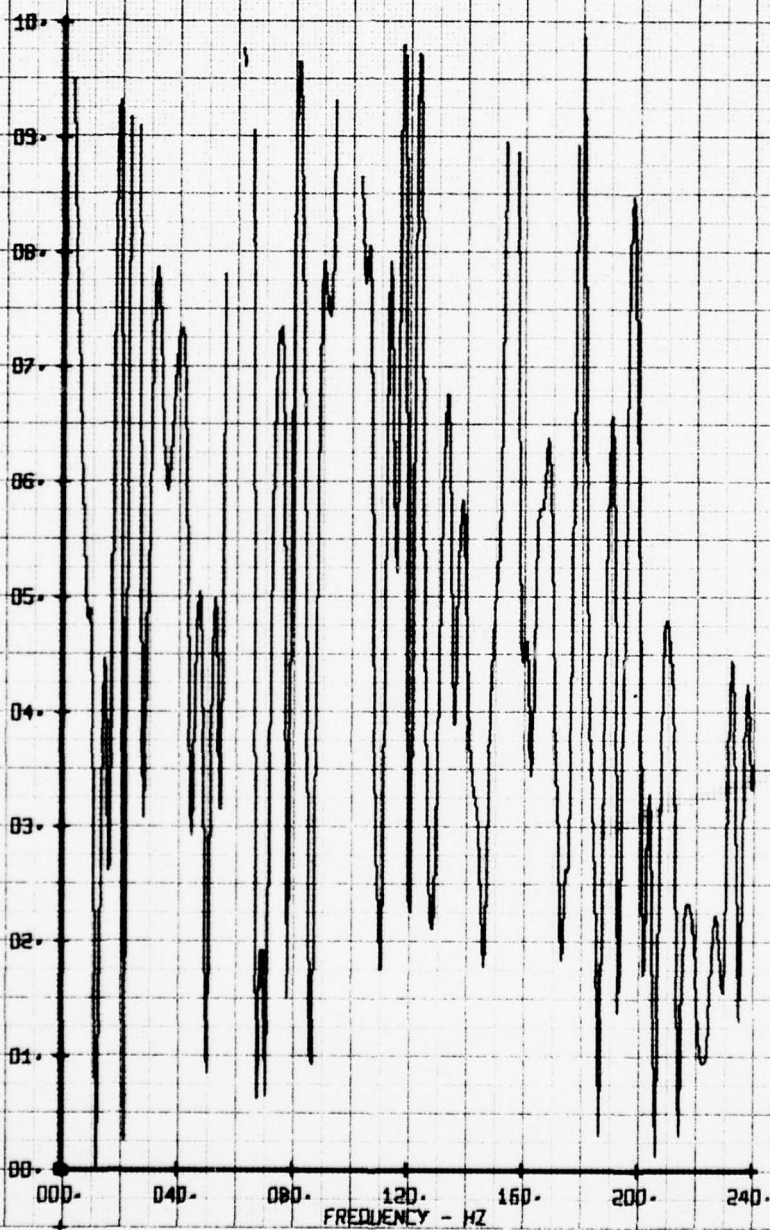
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WAM-D-ERTSSEE 100
RUN 182 TP 5

LEGEND
CH 66
PARAMETER
V-ALPHA

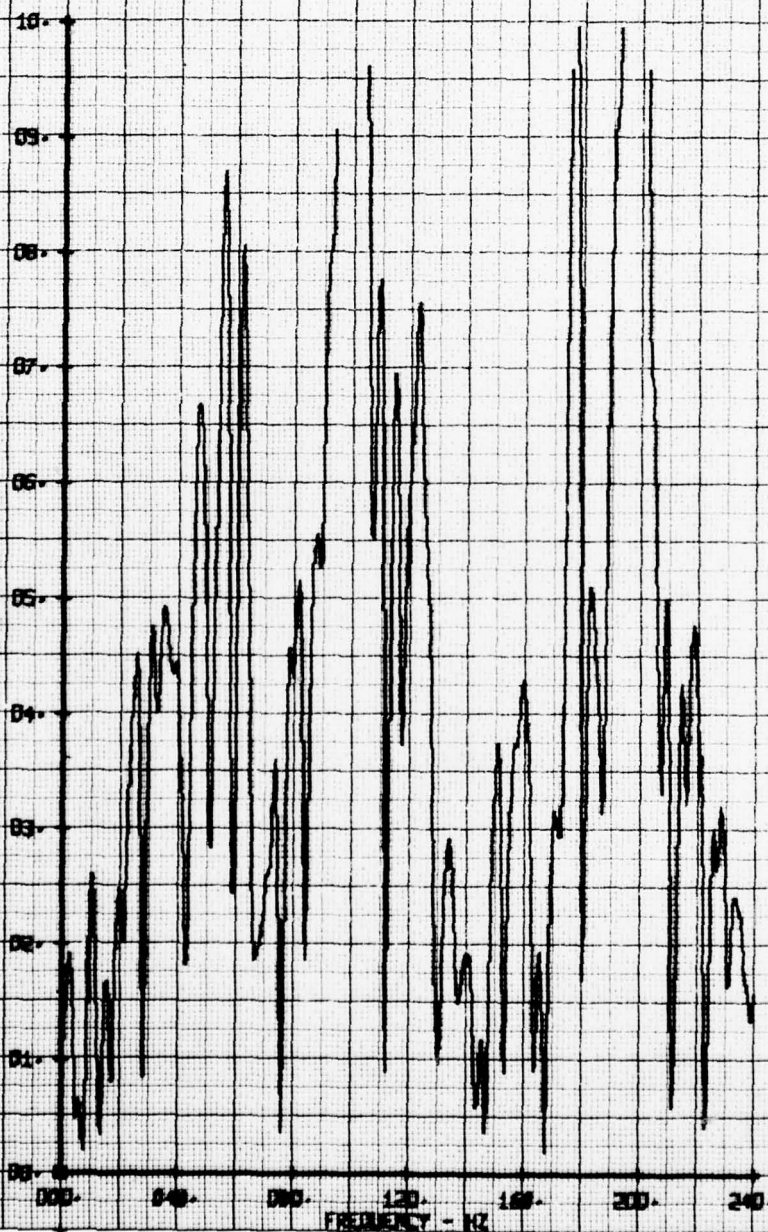
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MOSC. HUB CWS WHAM-D-FRISBEE 100
RUN 182 TP 6

LEGEND
CH 66
PARAMETER
V-ALPHA

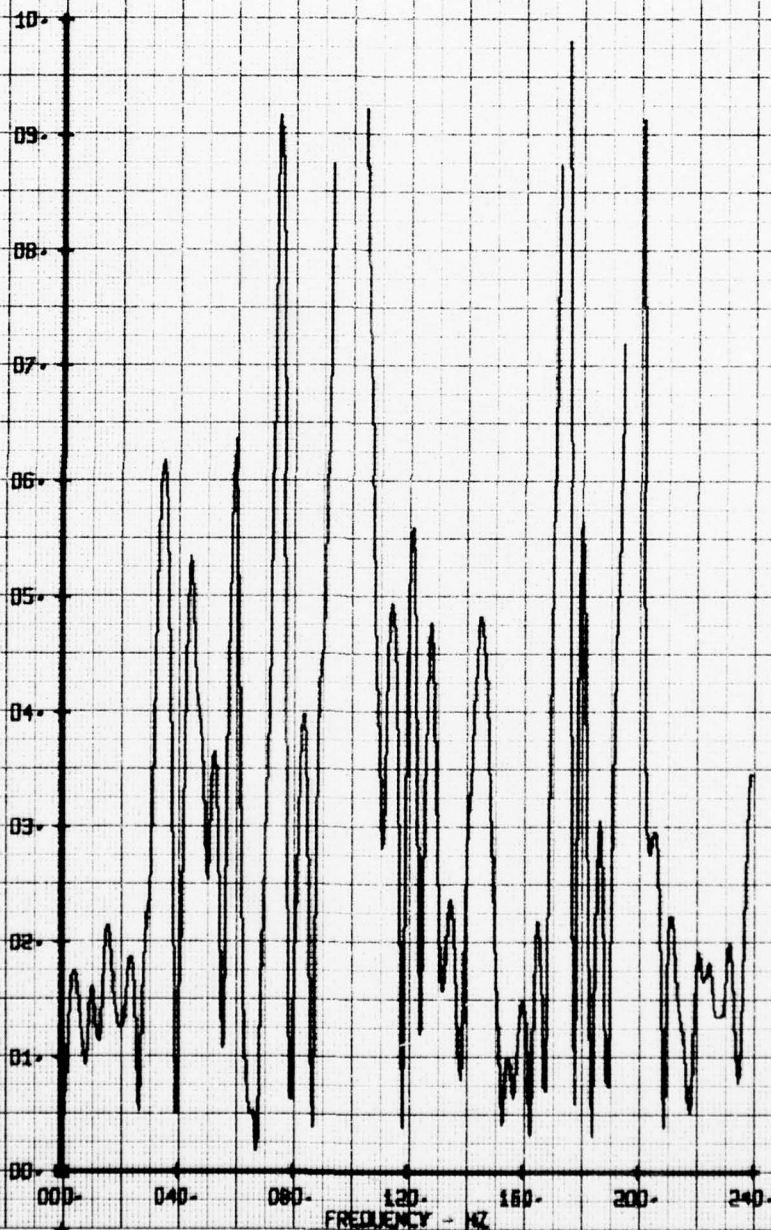
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FRISBEE 100
RUN 182 TP 7

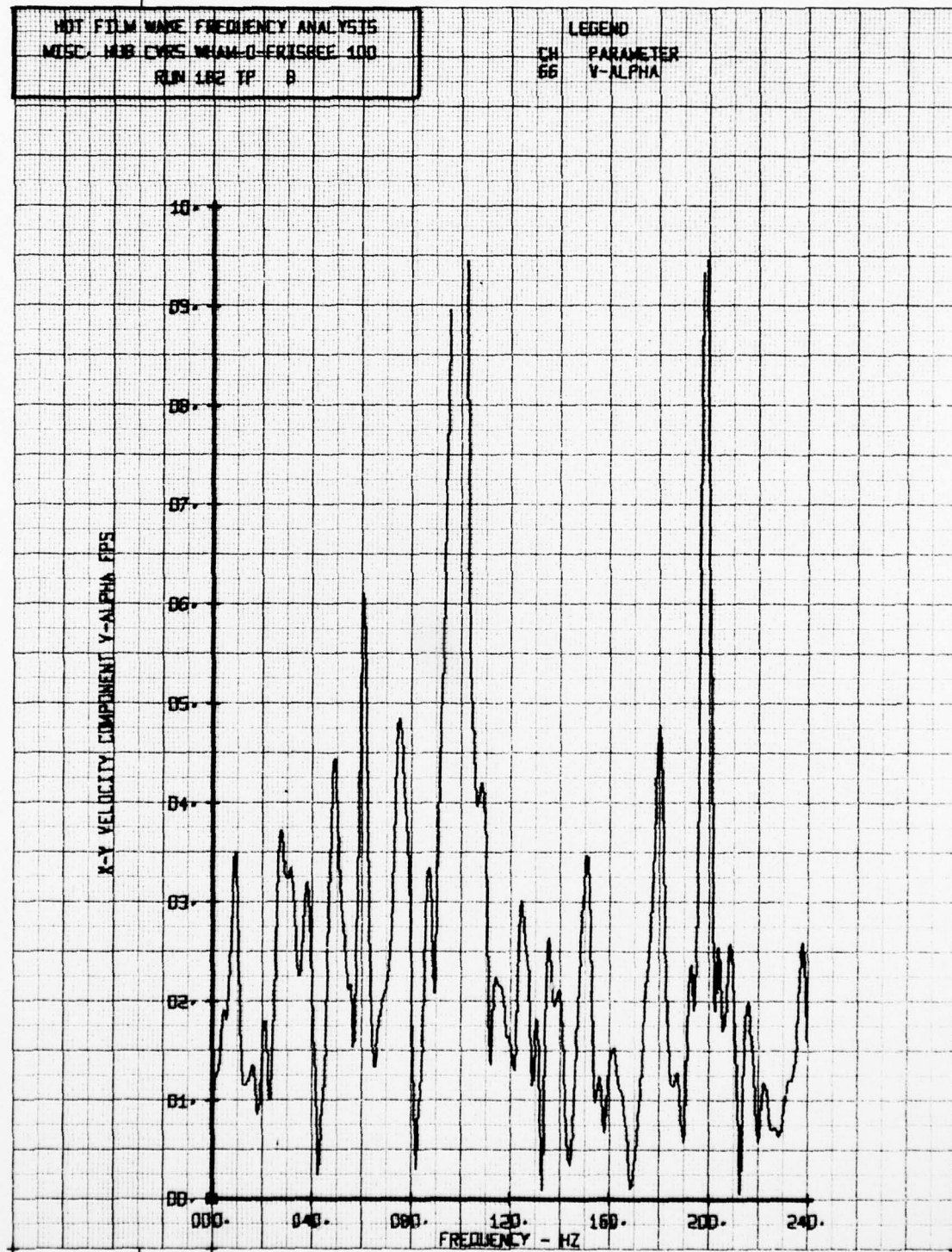
LEGEND
CH. PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS WHAM-O-FRISBEE 100
RUN 182 TP B

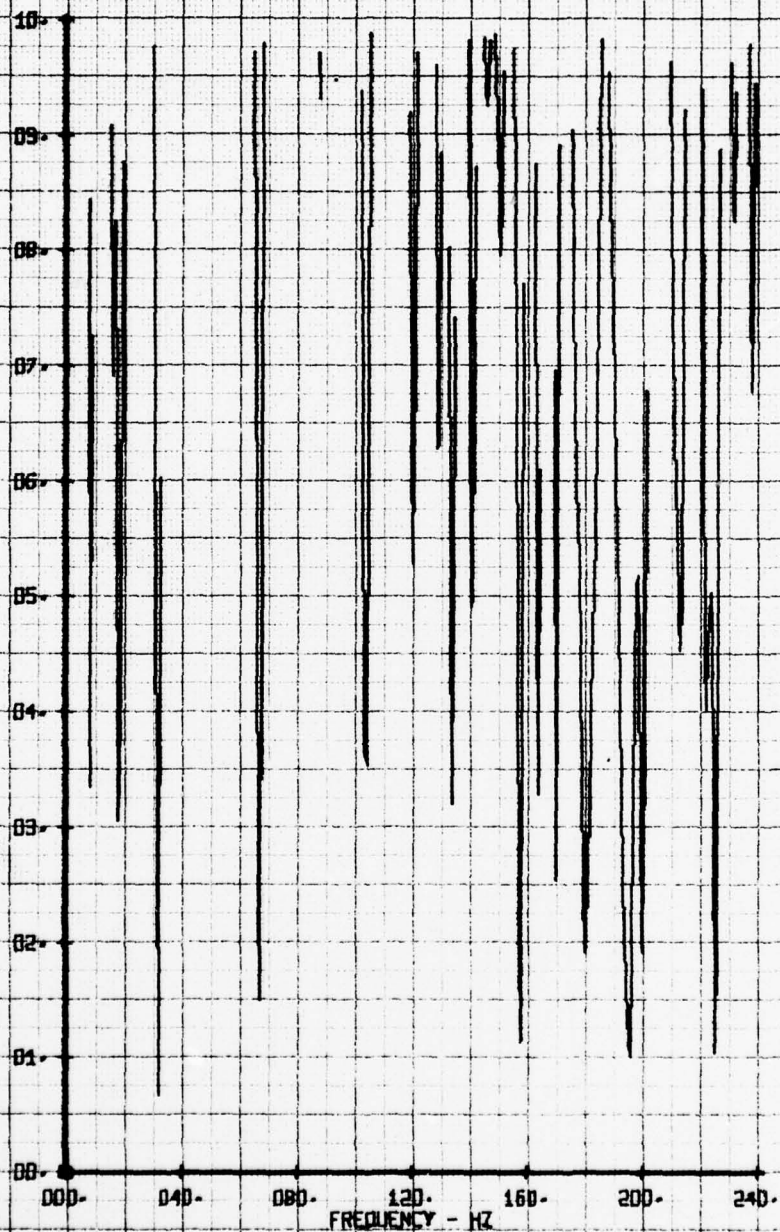
LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WAM-O-ERTSSEE 100
RUN 1B2 TP 2

LEGEND
CH 65
PARAMETER
V-BETA

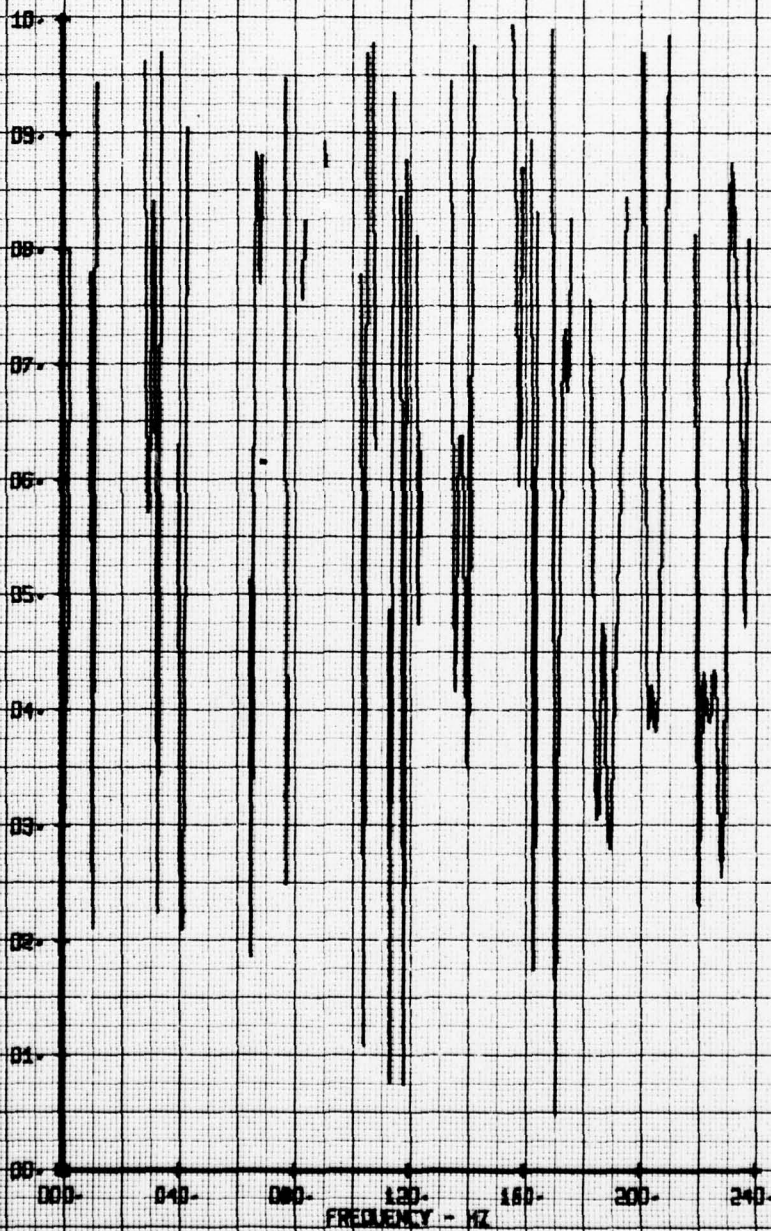
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS WAM-D-ERTSSEE 100
RUN 182 TP 3

LEGEND
CH 65
PARAMETER
V-BETA

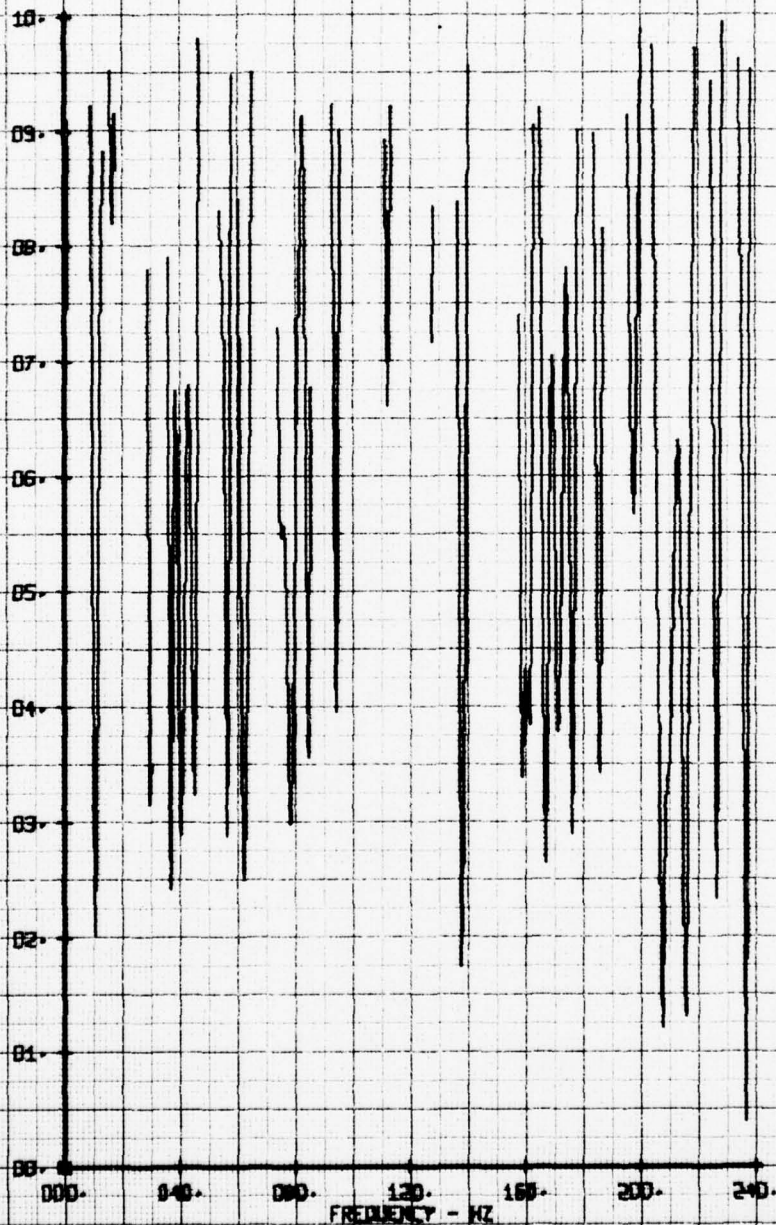
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS WHAM-O-FRISBEE 100
RUN 182 TP 4

LEGEND
CH. PARAMETER
65 V-BETA

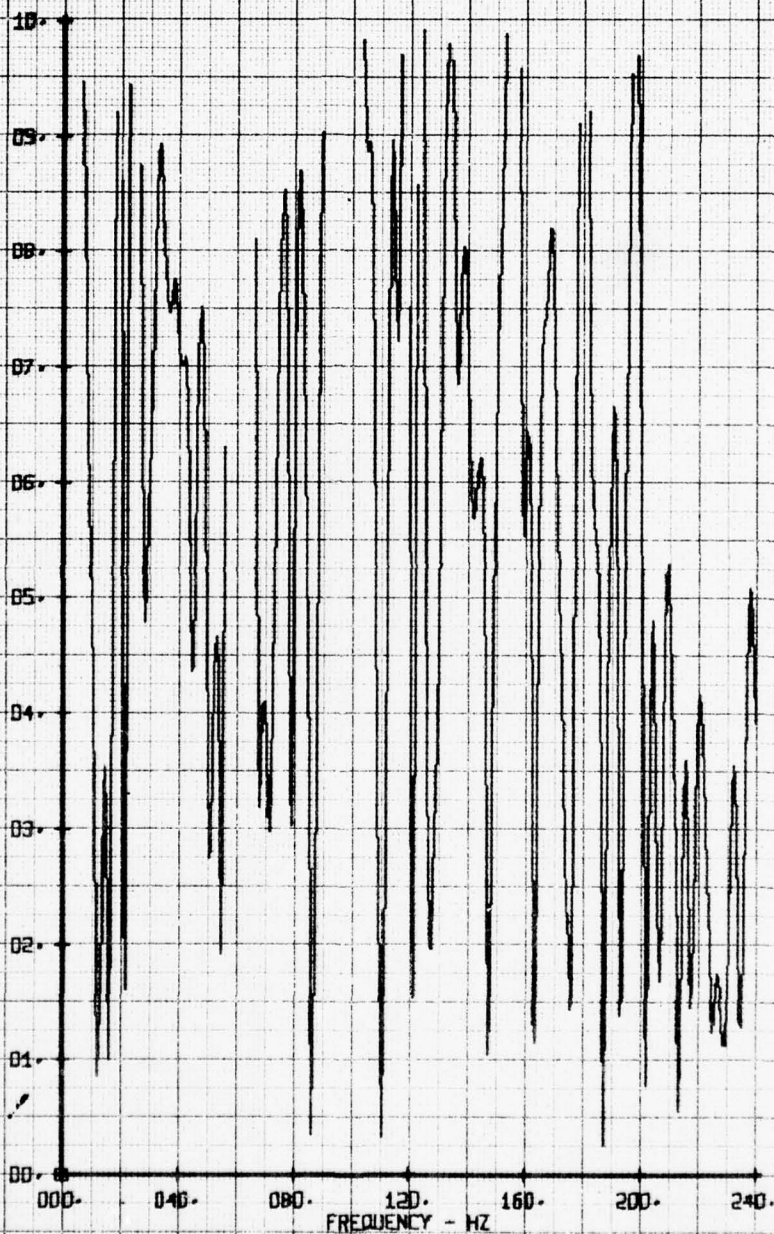
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS MAM-0-ERISBEE 100
RUN 102 TP 5

LEGEND
CH PARAMETER
65 V-BETA

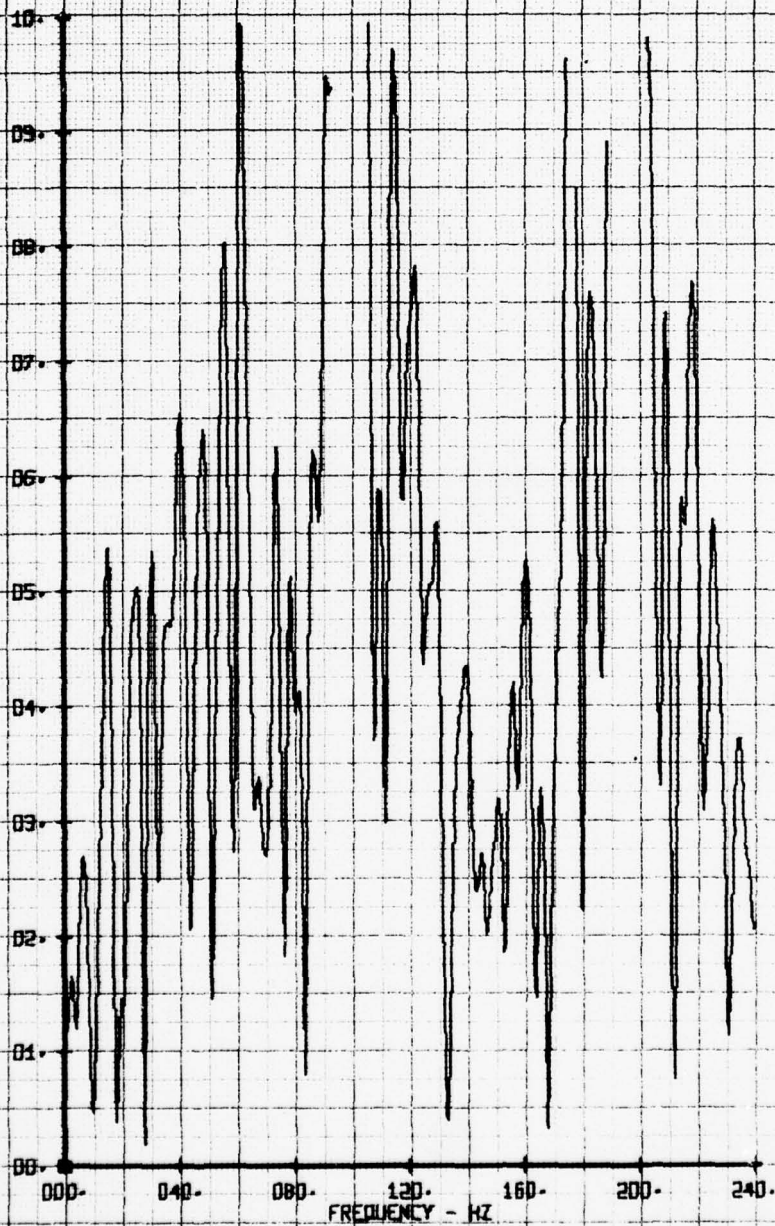
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WAM-D-ERTSREE 100
RUN 182 TP 6

LEGEND
CH PARAMETER
65 V-BETA

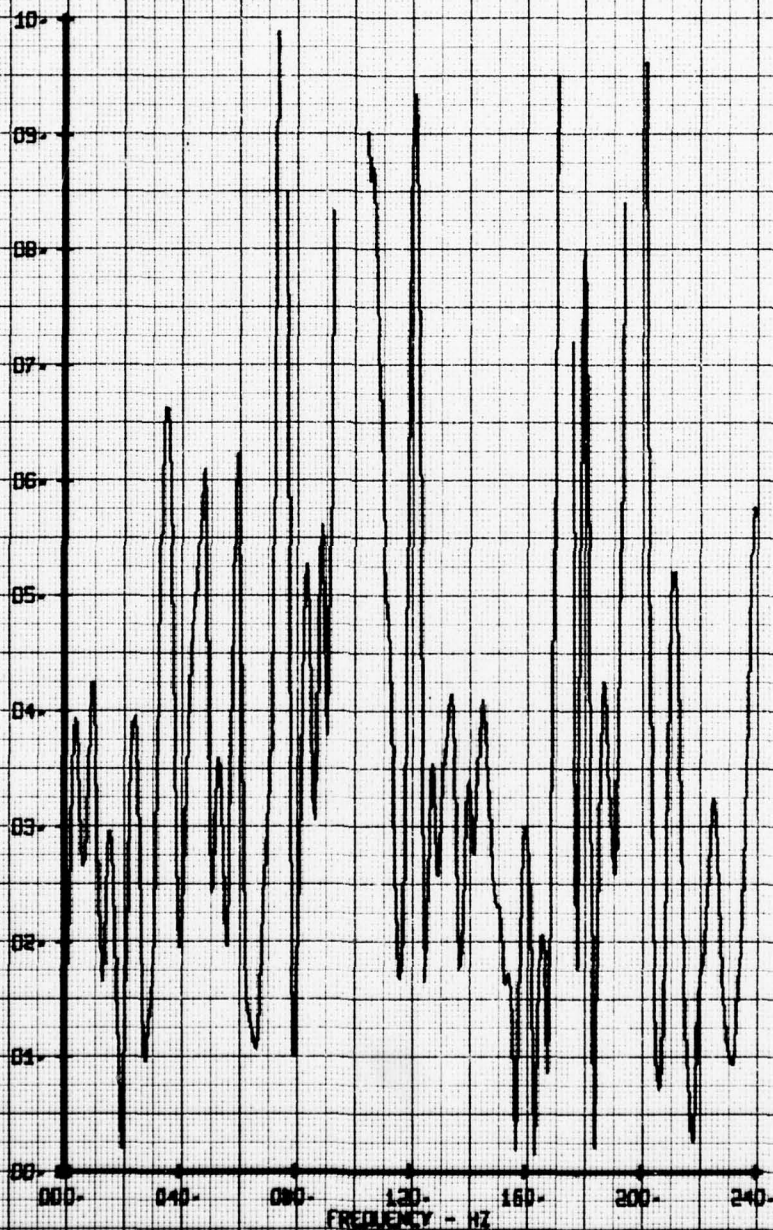
X-Z VELOCITY COMPONENT V-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FLISBEE 100
RUN 182 TP 7

LEGEND
CH 65 PARAMETER
V-BETA

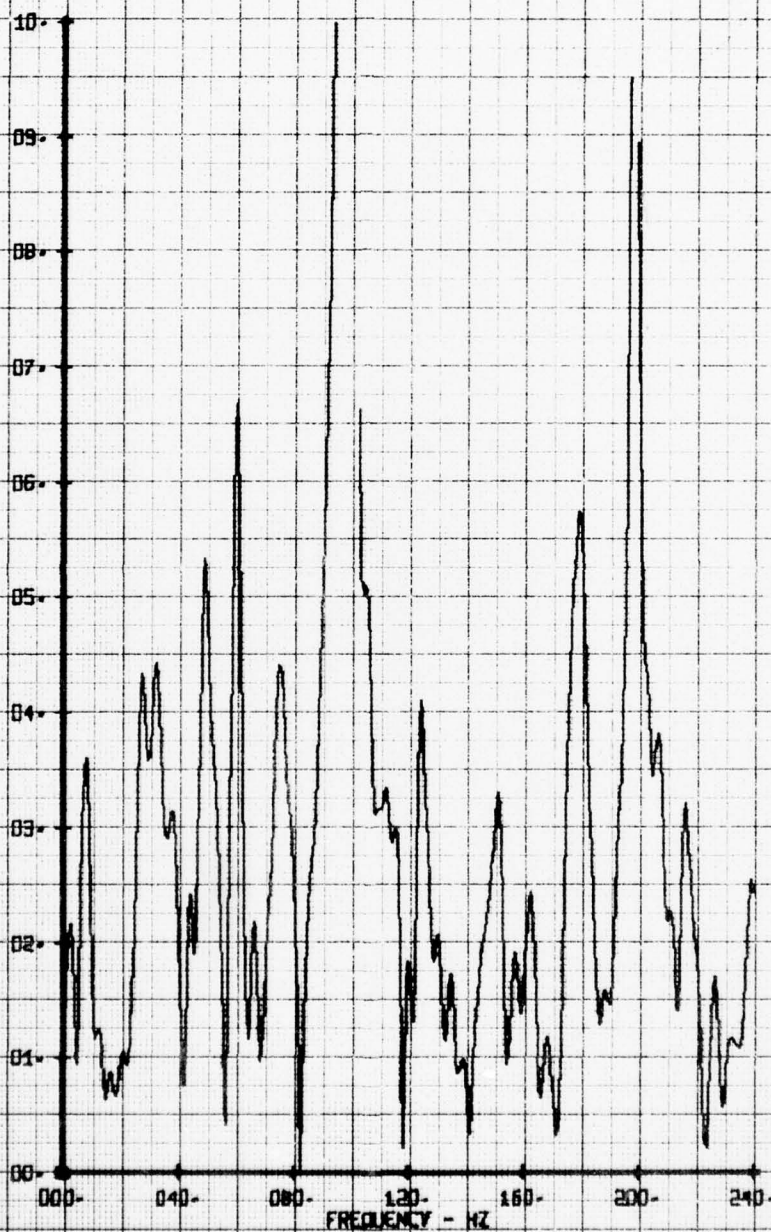
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS WHAM-O-FRISBEE 100
RUN 1B2 TP 8

LEGEND
CM PARAMETER
65 V-BETA

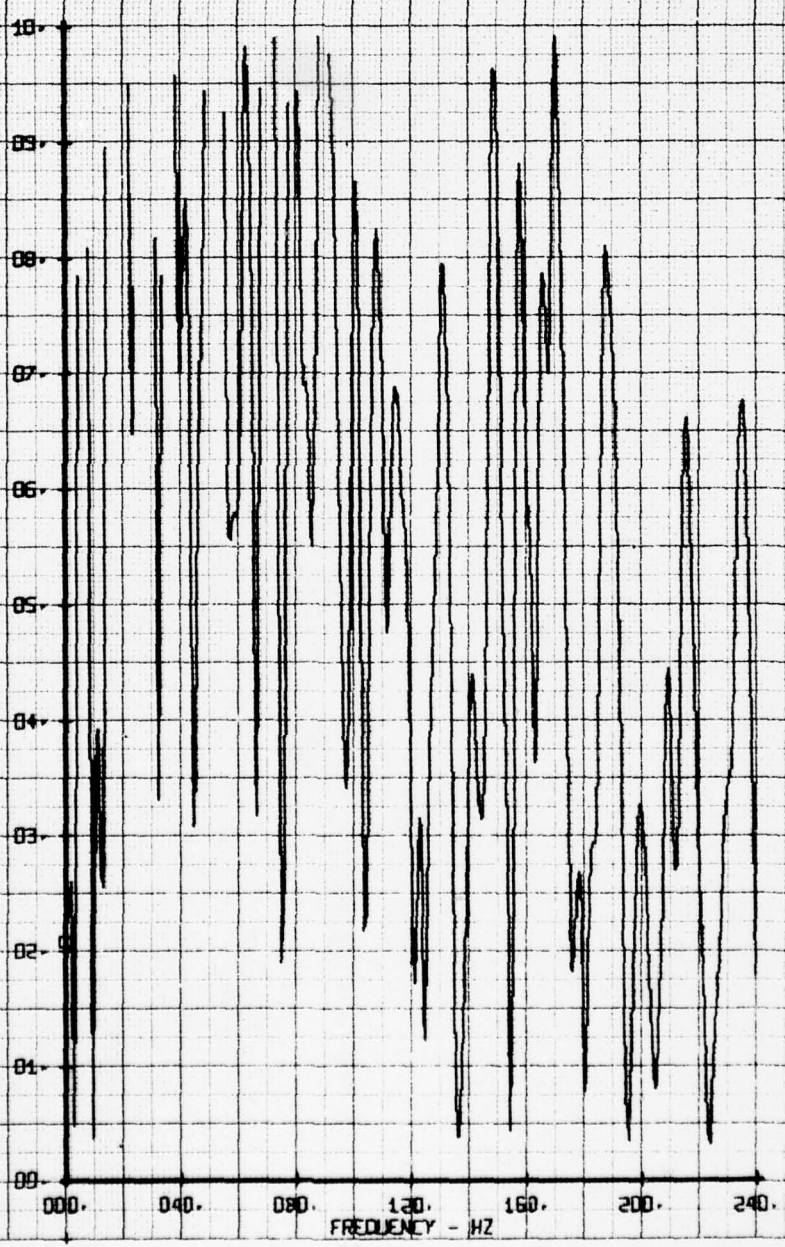
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 182 TP 2

LEGEND
 CH 66
 PARAMETER
 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



AD-A062 590

BOEING VERTOL CO PHILADELPHIA PA
INTERACTIONAL AERODYNAMICS OF THE SINGLE ROTOR HELICOPTER CONF1--ETC(U)
SEP 78 P F SHERIDAN

F/G 1/3

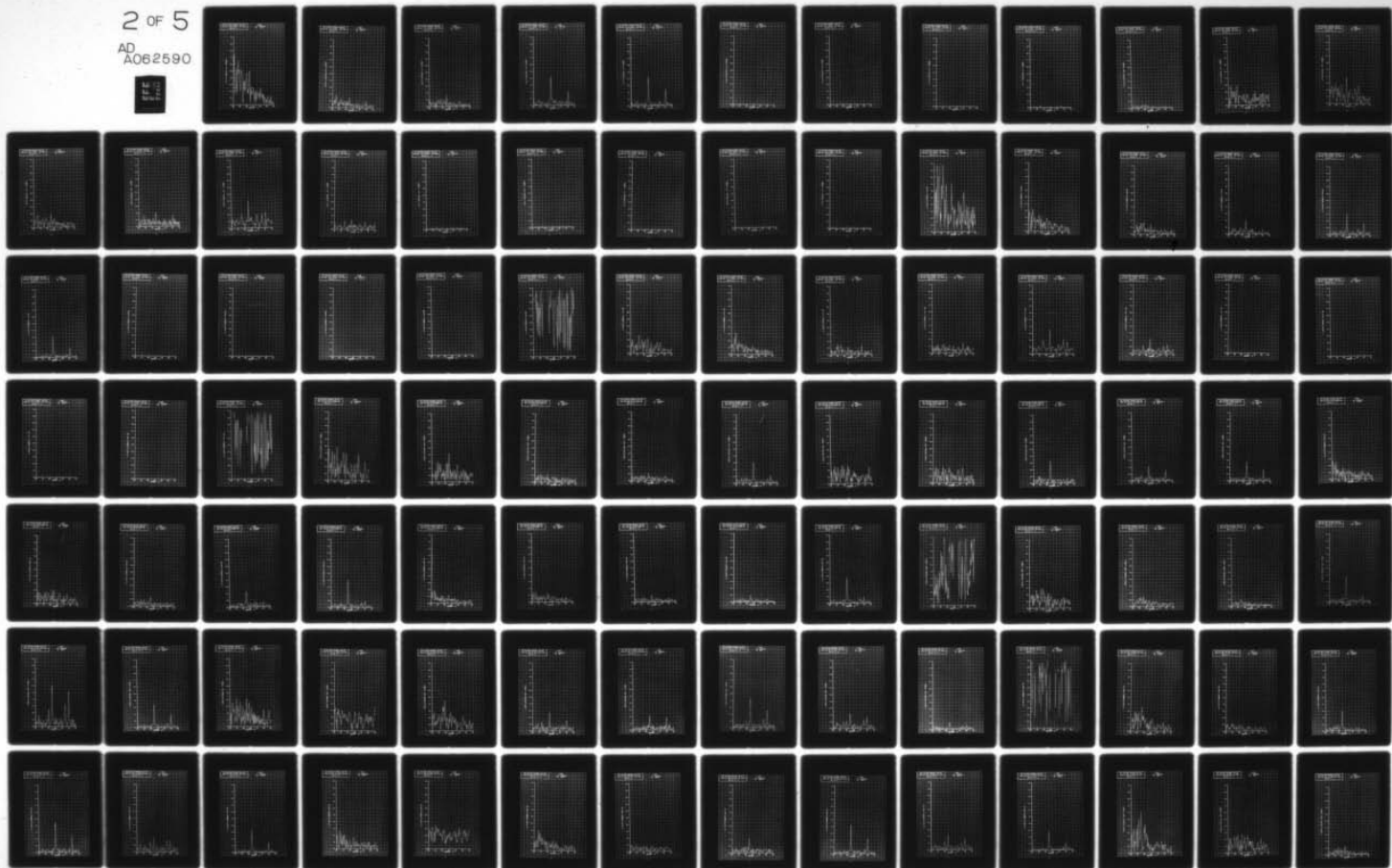
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USARTL-TR-78-236

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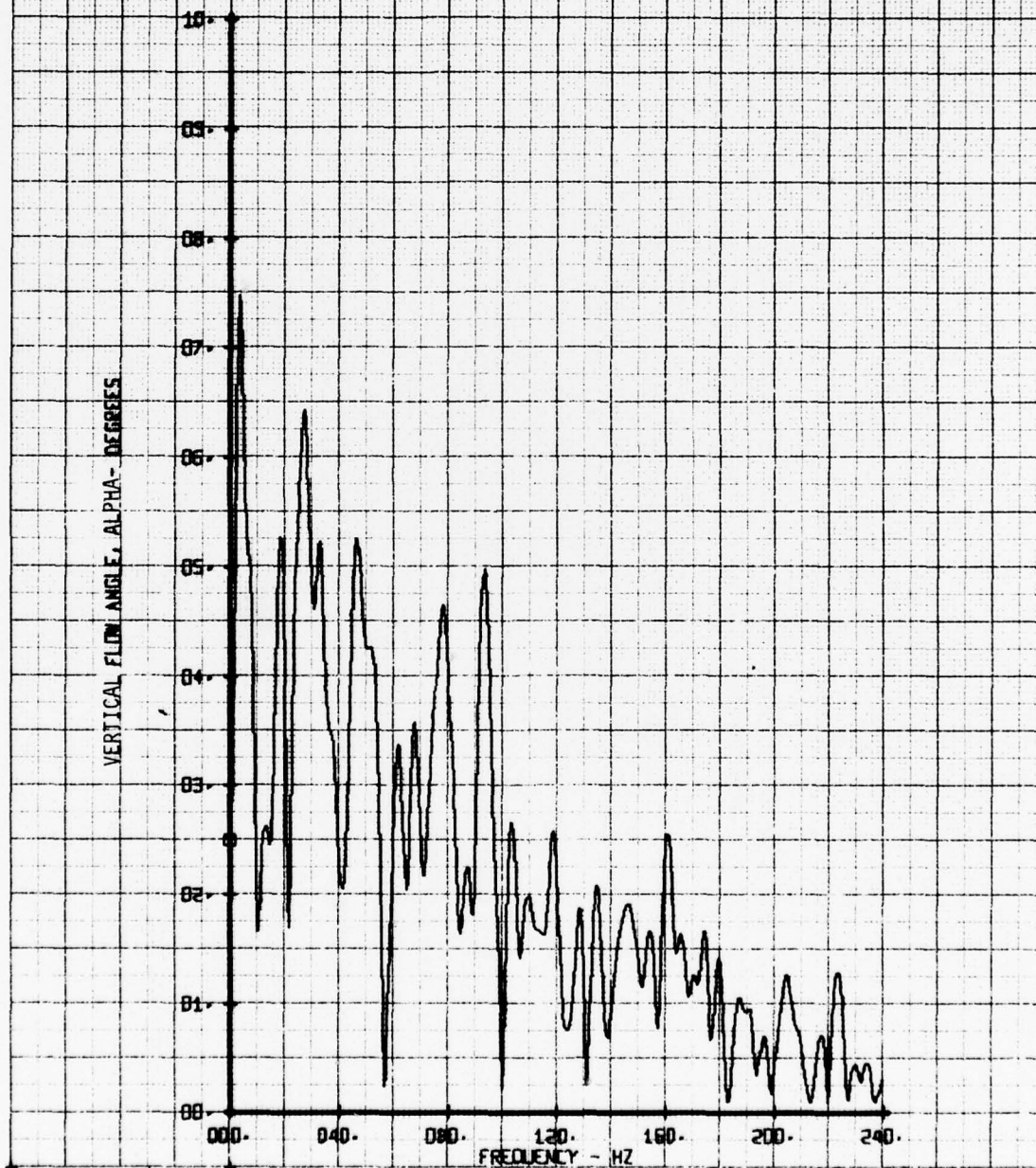
UNCLASSIFIED

2 OF 5
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HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - C/F OF WINGS HUB COVERS
RUN 181 TP 3

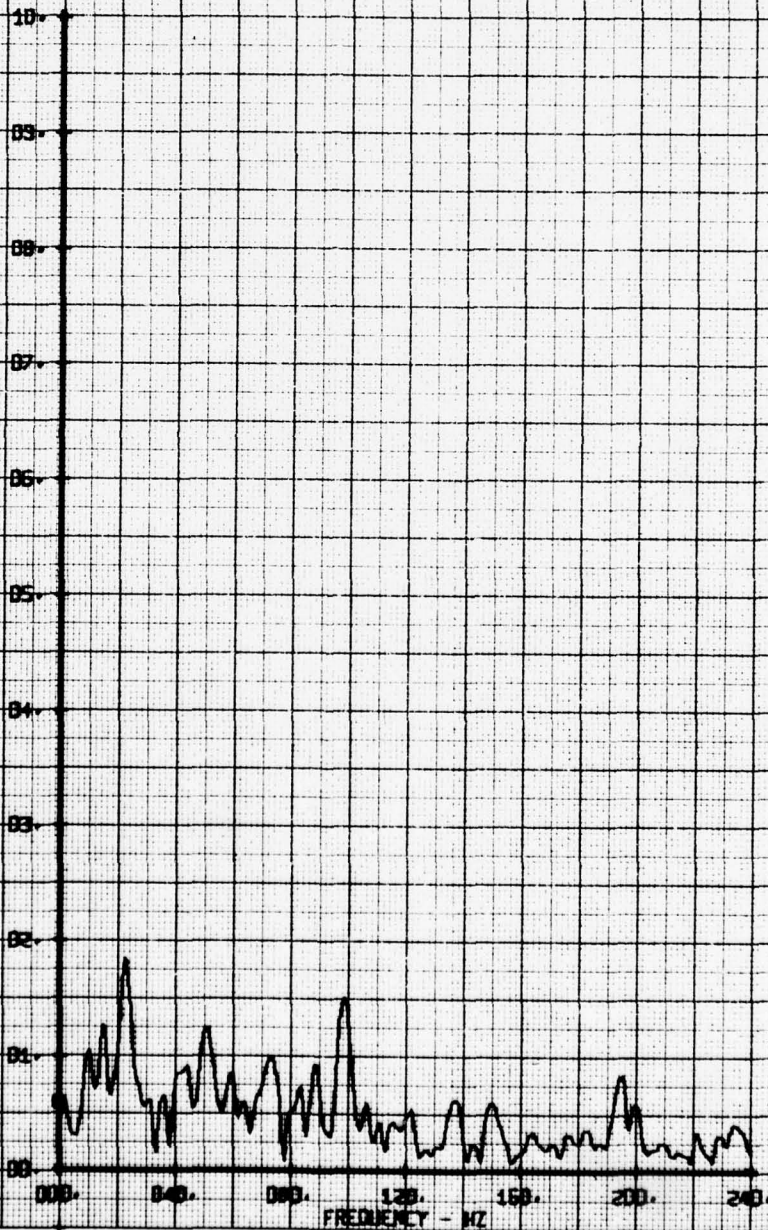
LEGEND
CH PARAMETER
56 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 101 TP 4

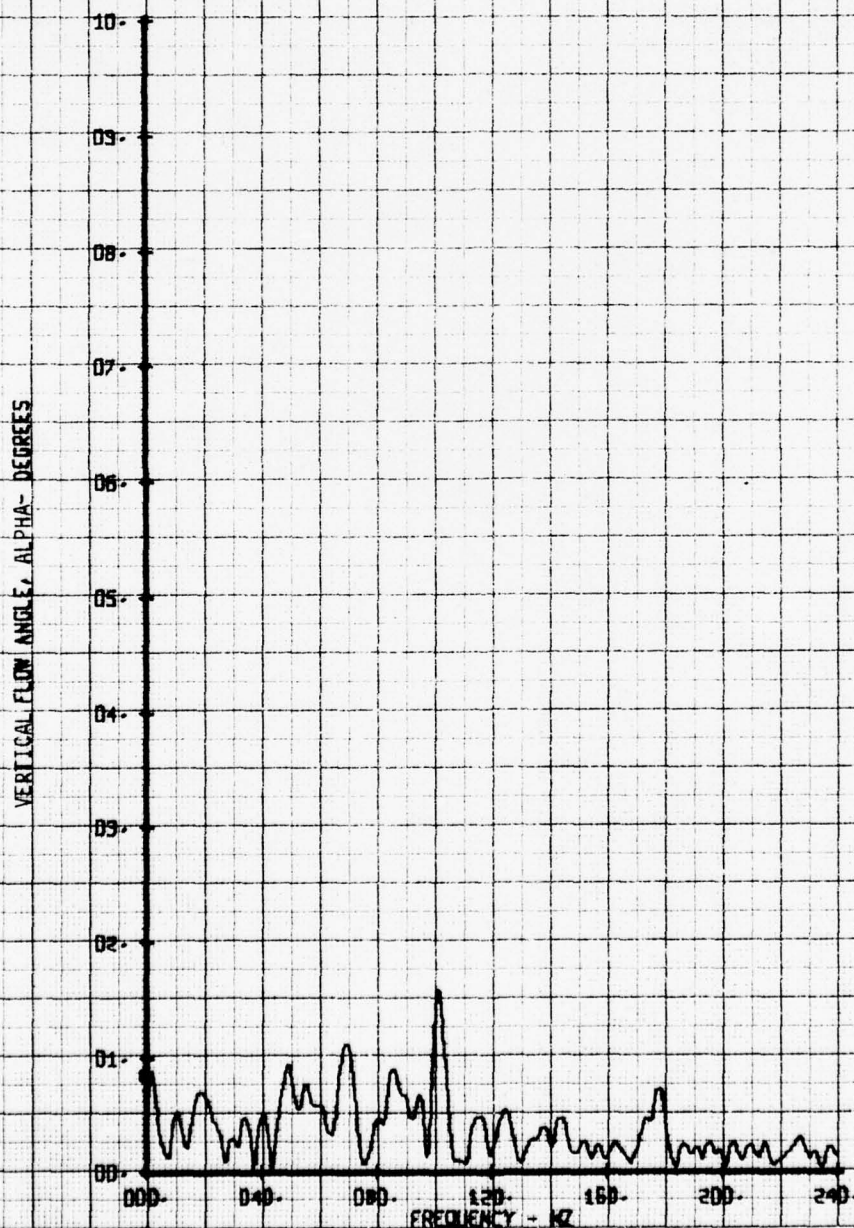
LEGEND
CM 66
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



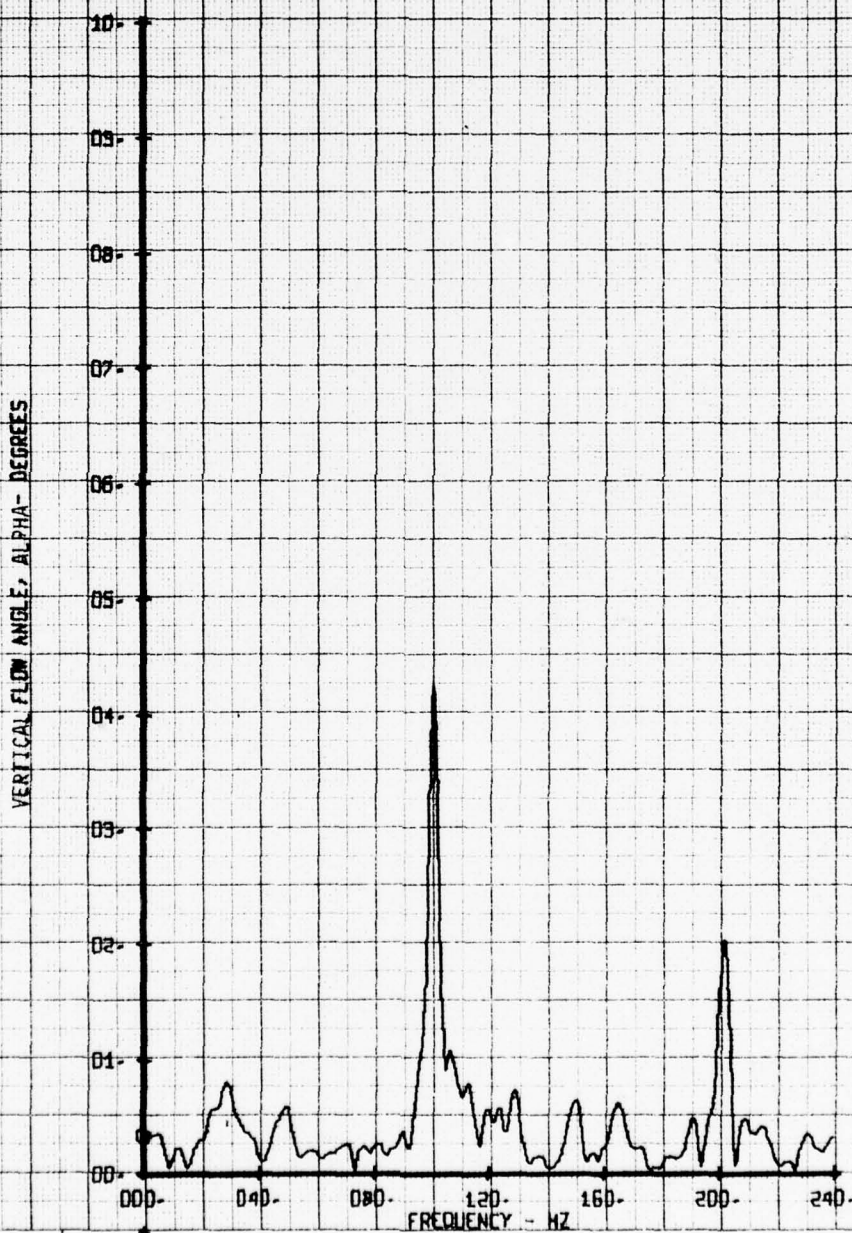
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 5

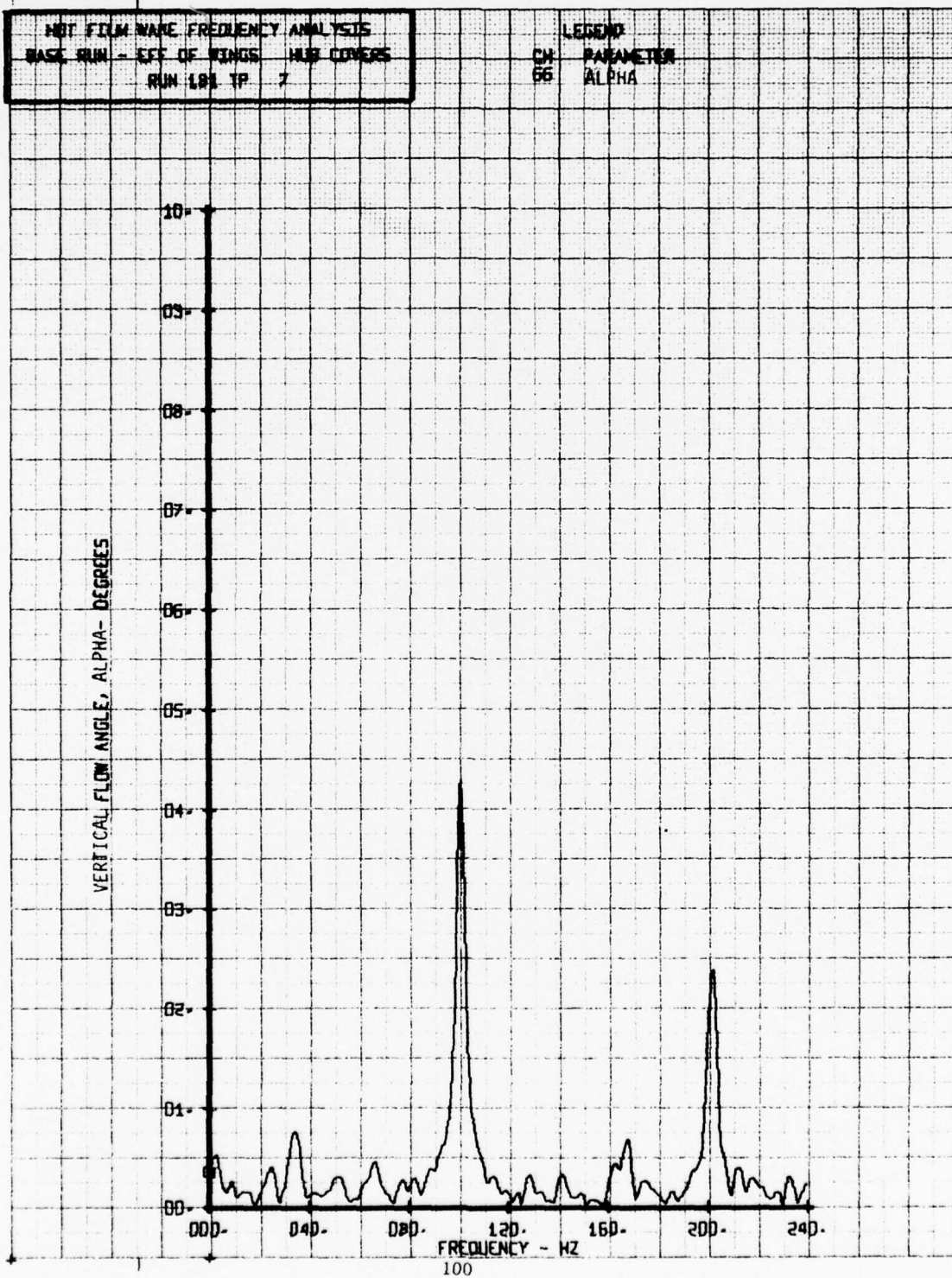
LEGEND
CH 56 PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB CORRECTION
RUN LOG TP 6

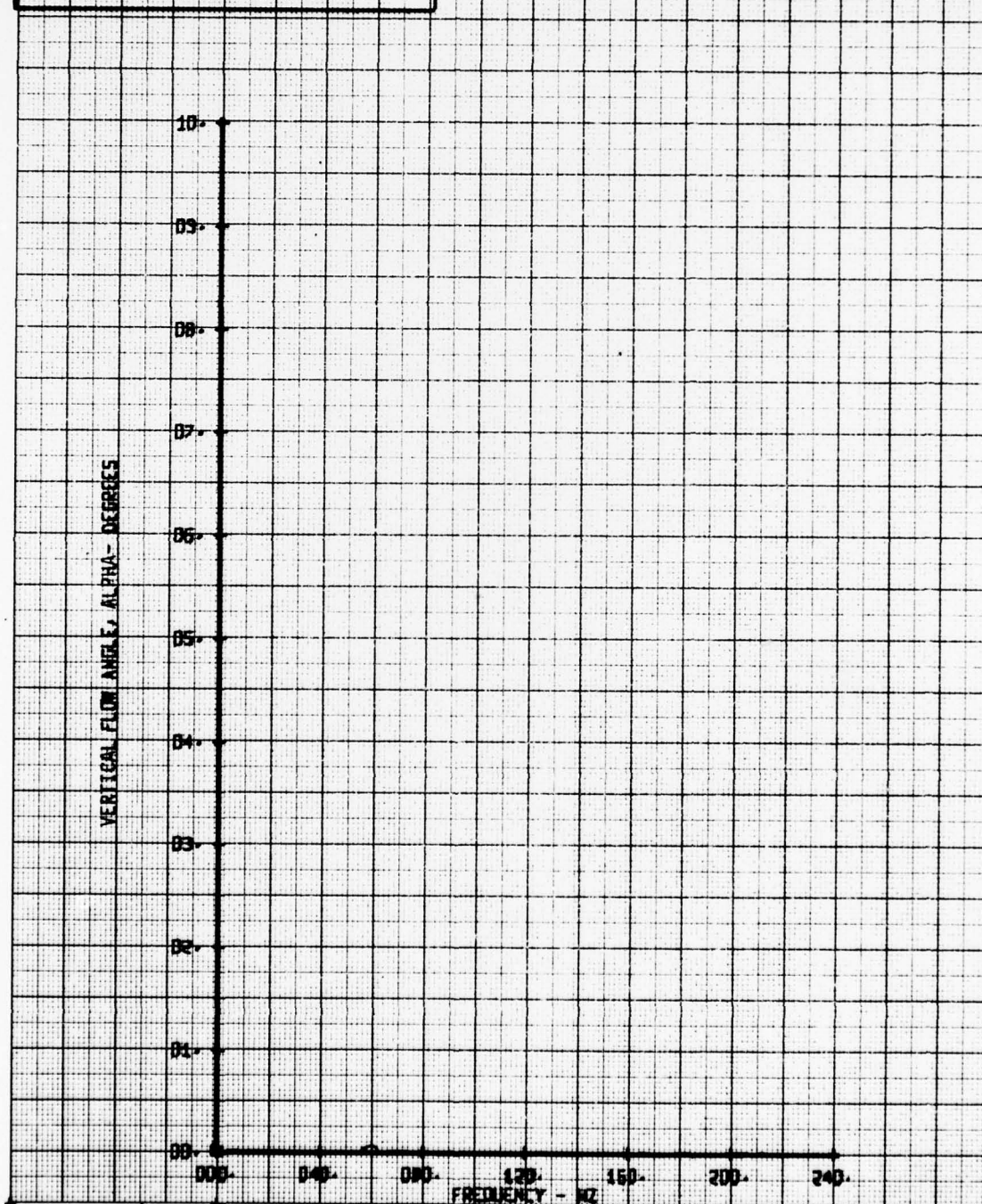
LEGEND
CH 56 PARAMETER
ALPHA





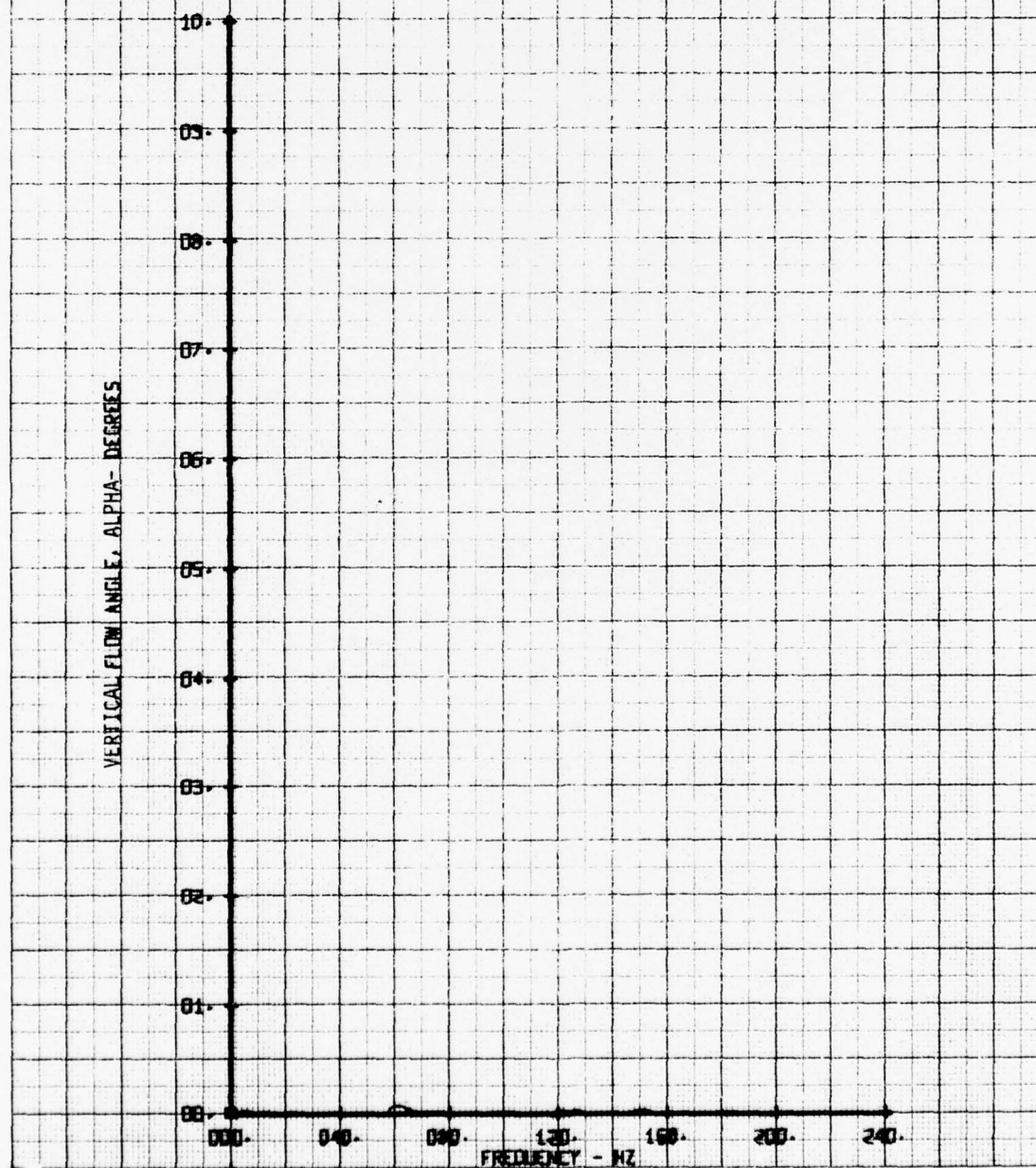
HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 184 TP 9

LEGEND
 CH PARAMETER
 56 ALPHA



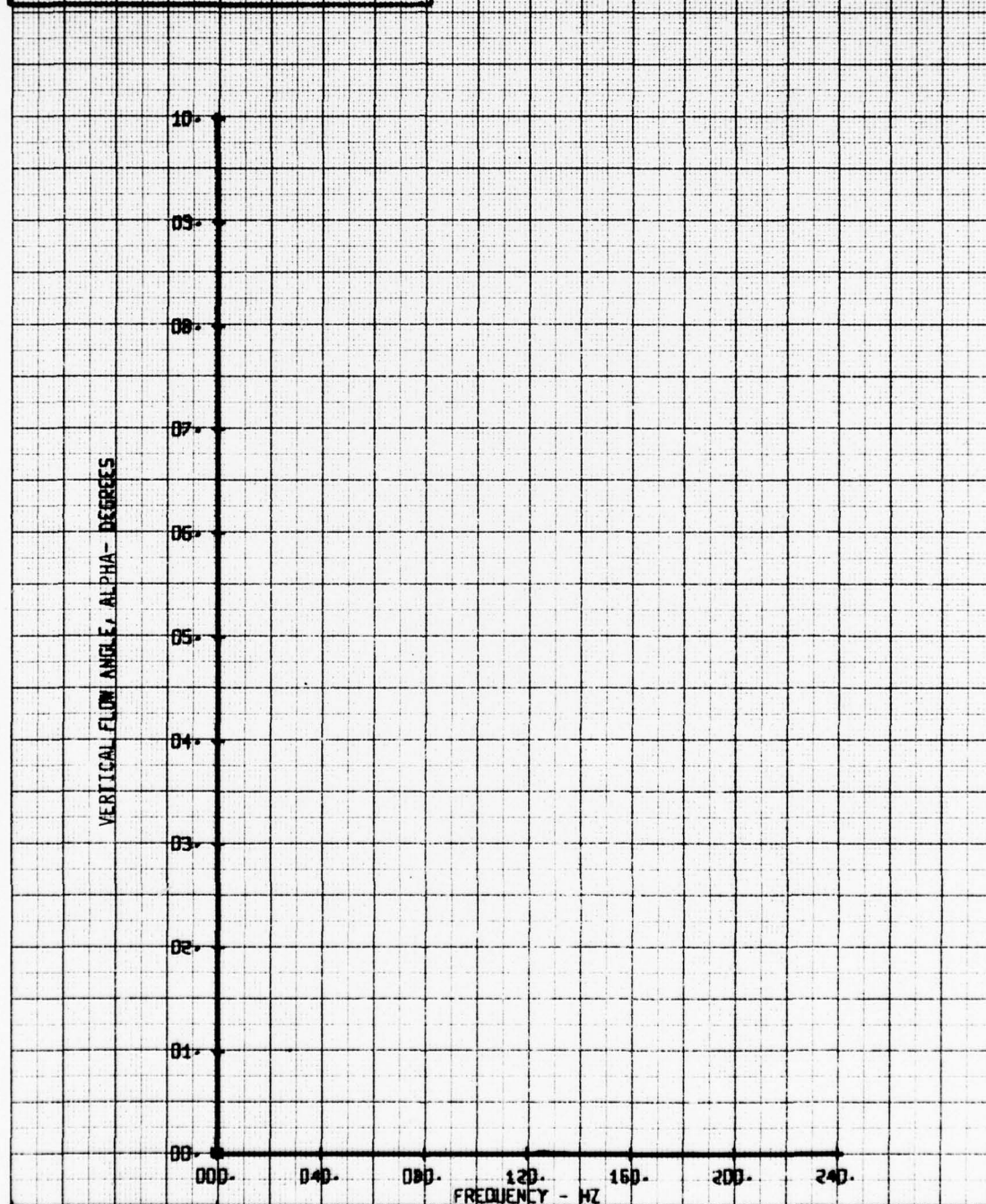
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 191 TP 10

LEGEND
CH PARAMETER
66 ALPHA



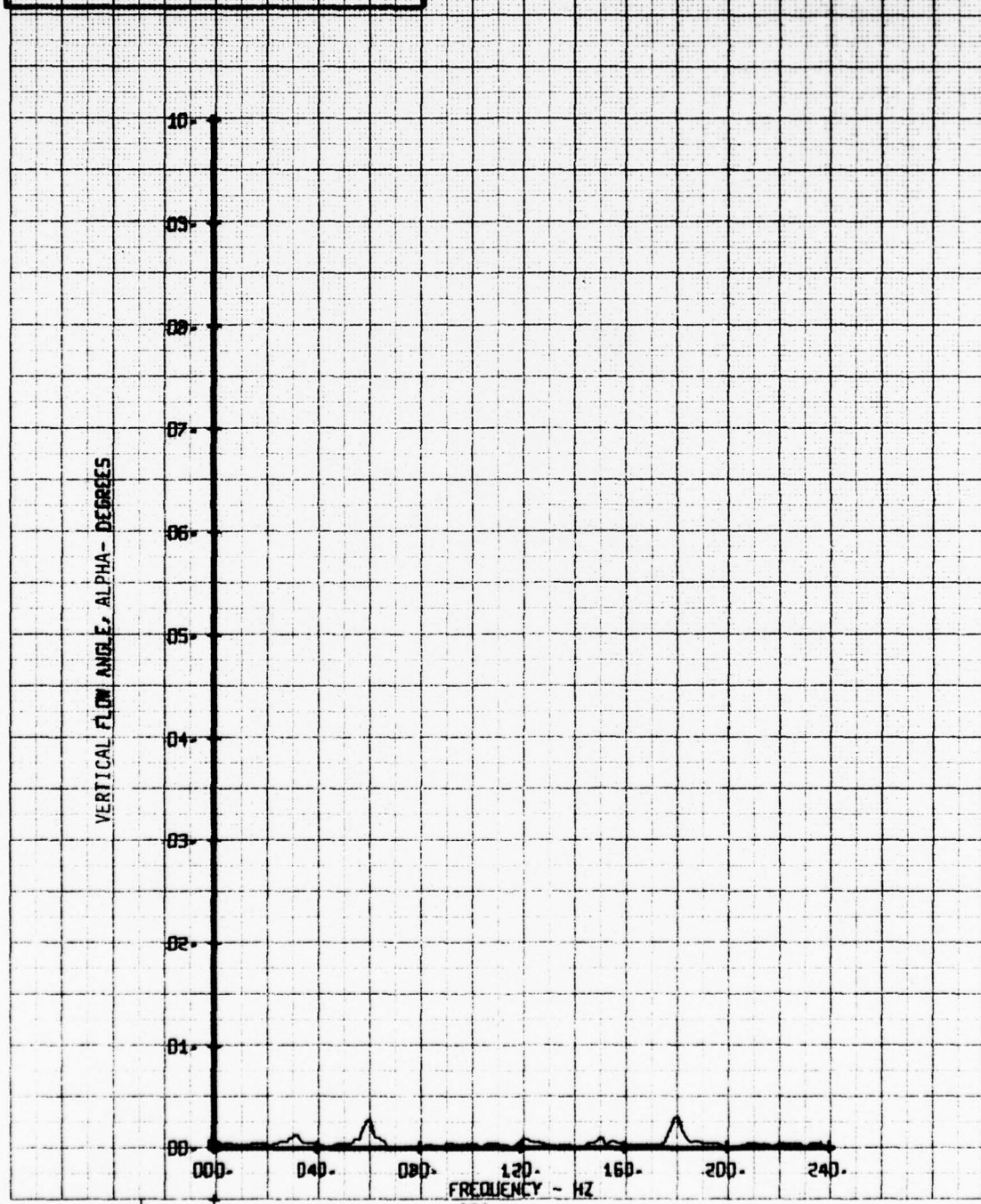
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 101 TP 11

LEGEND
CH PARAMETER
55 ALPHA



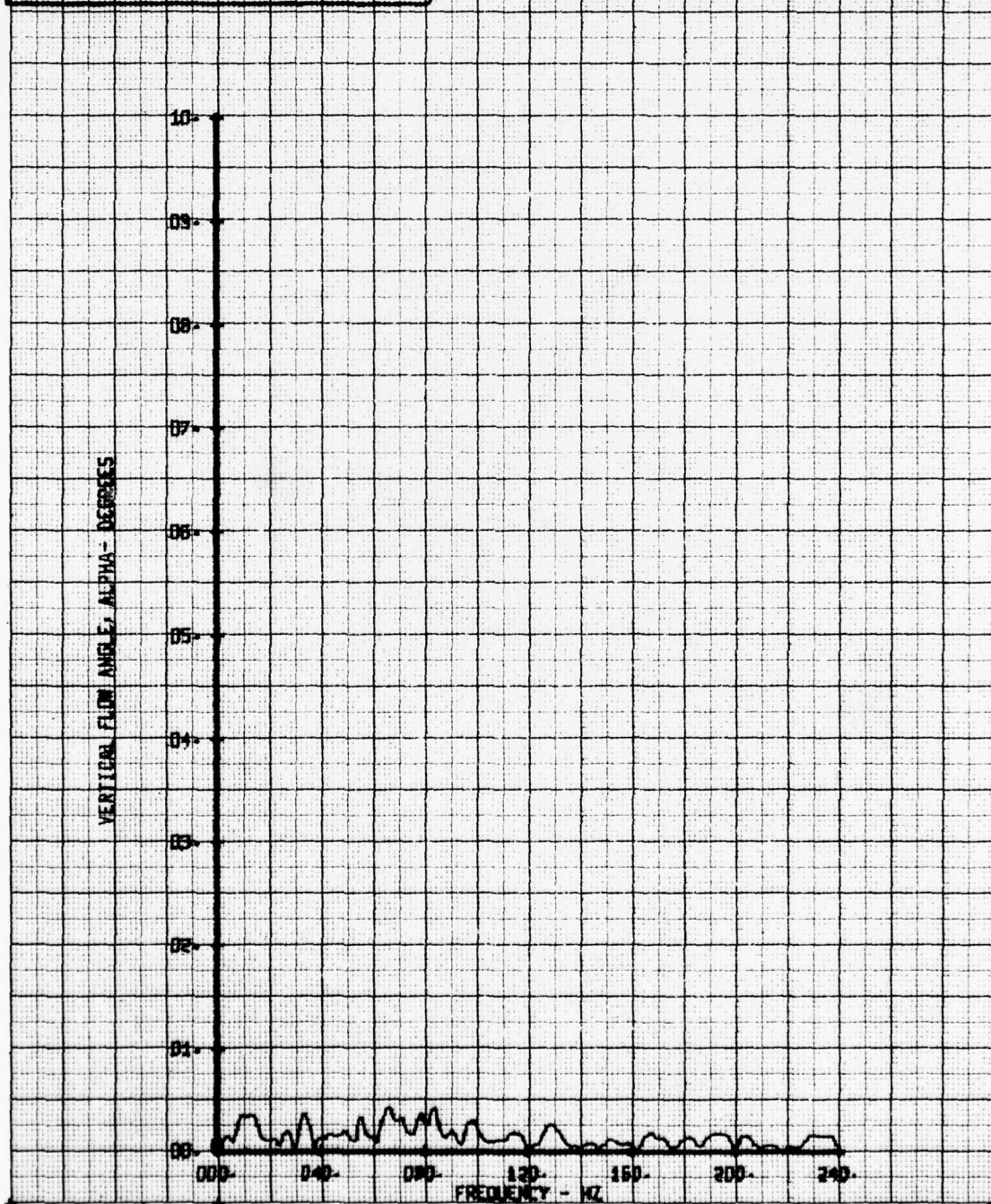
HOT FILM WAVE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 131 TP 12

LEGEND
CH 66
PARAMETER ALPHA



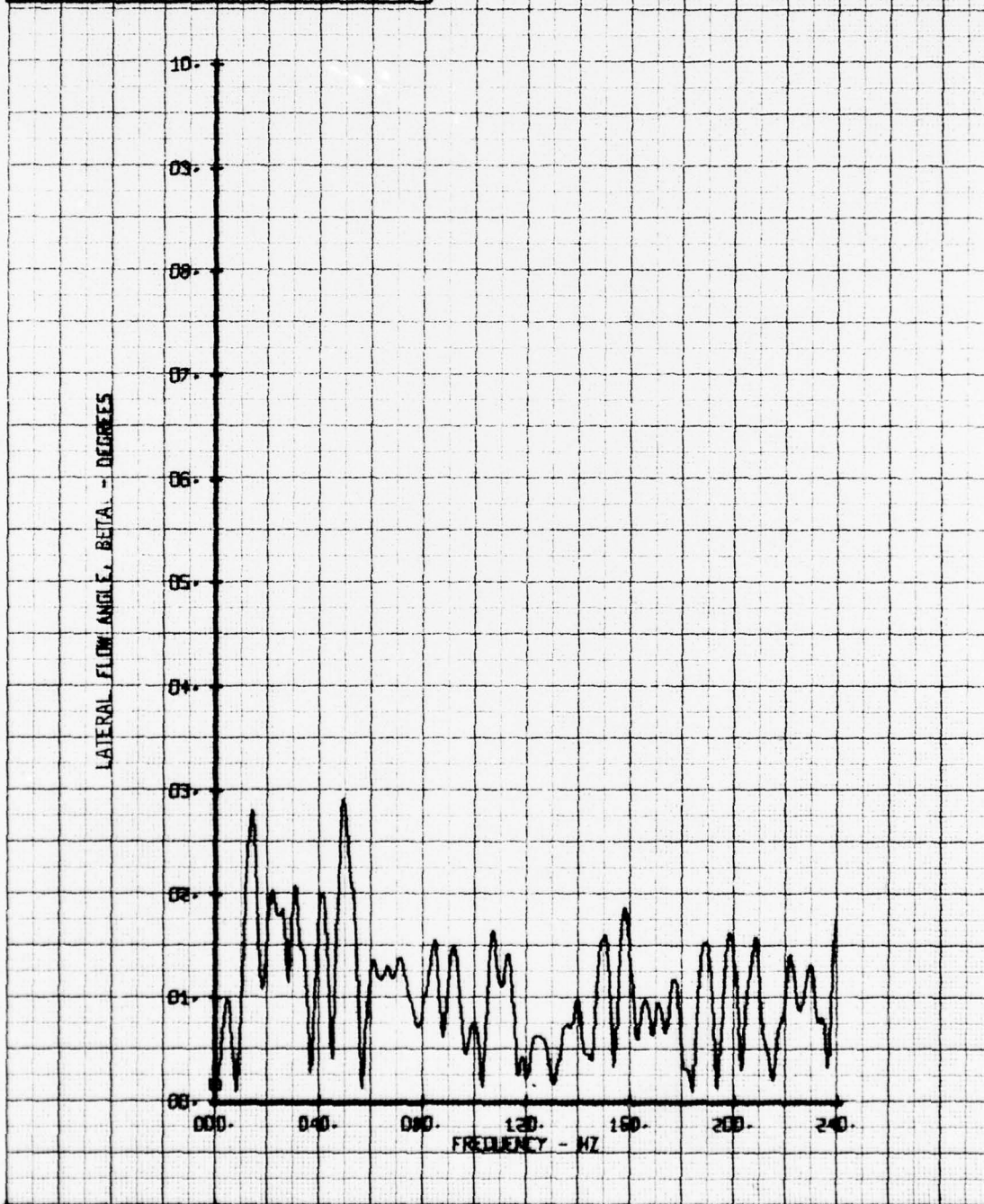
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 13

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 2

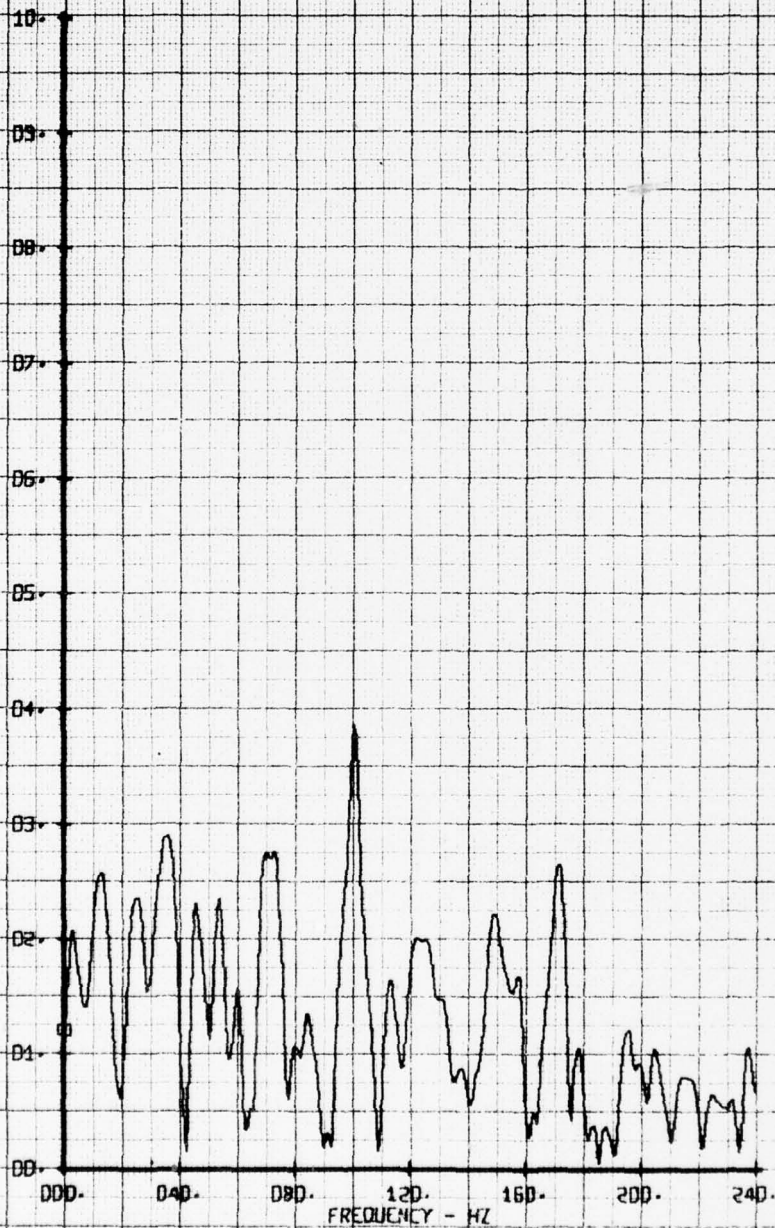
LEGEND
 CH 65
 PARAMETER BETA



HOT FILM WIRE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 3

LEGEND
 CH 65 PARAMETER
 BETA

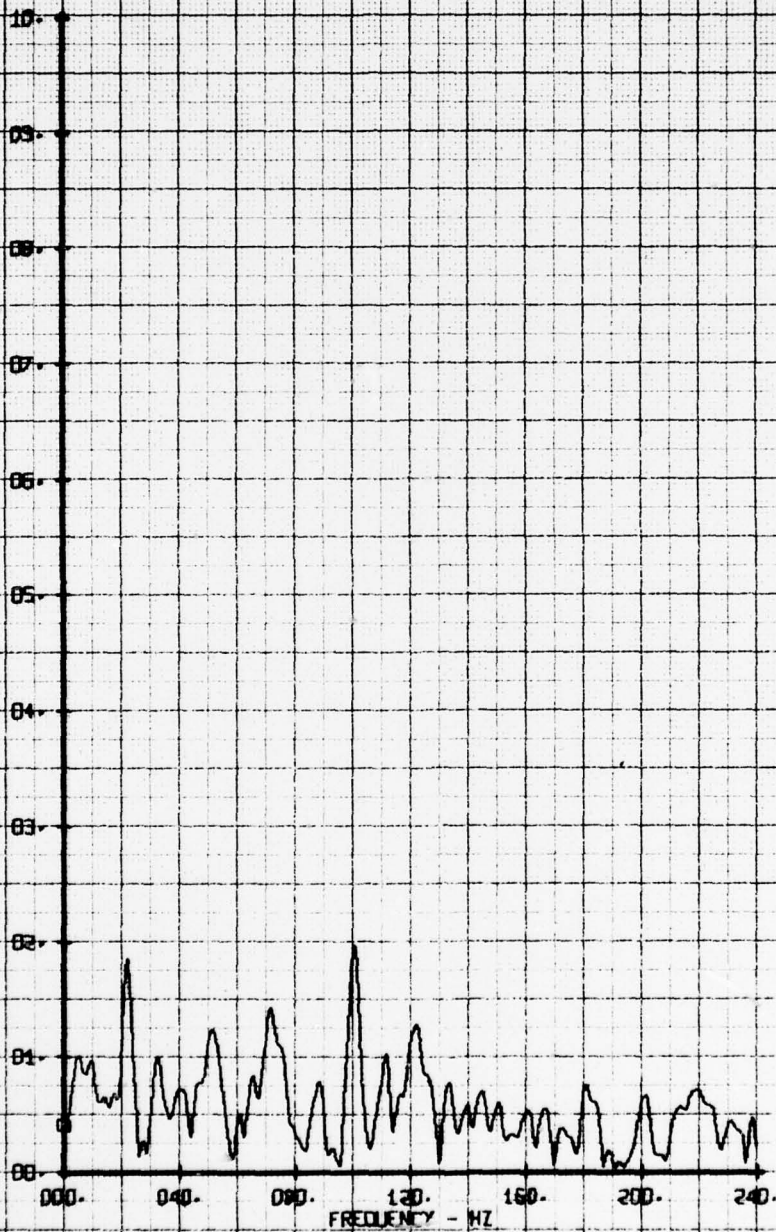
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 1

LEGEND
 CH PARAMETER
 ES BETA

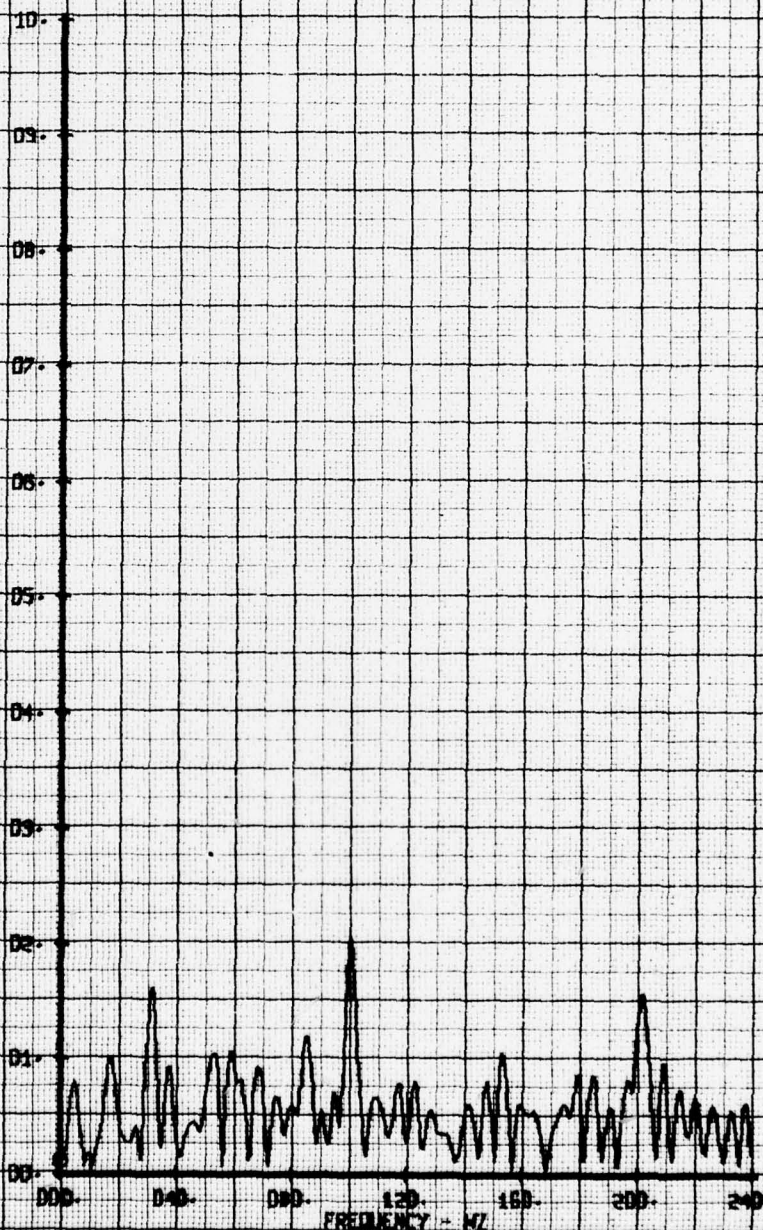
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
PAGE RUN - EFF OF WINGC HUB COVERC
RUN 184 TP S

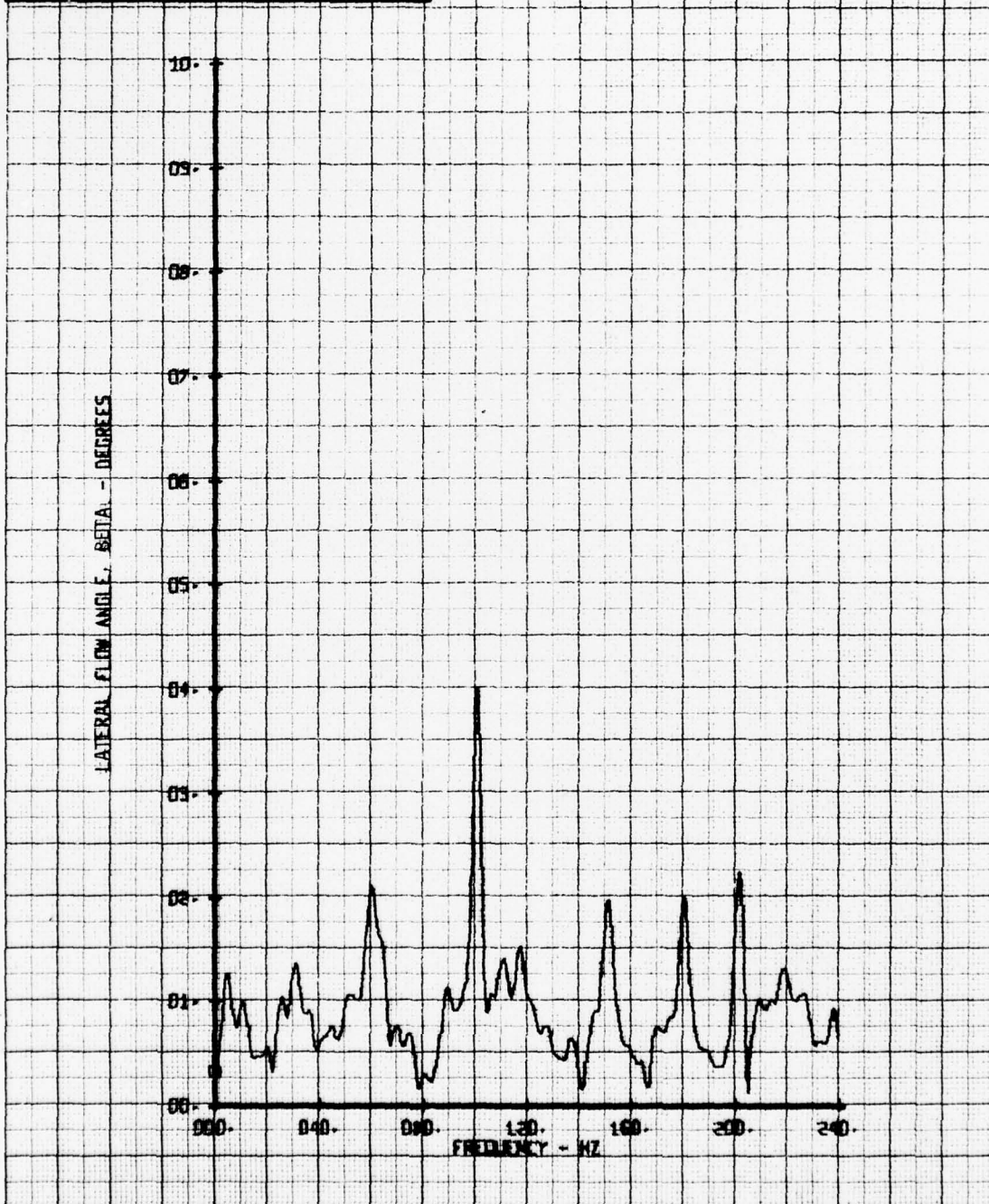
LEGEND
CH PARAMETER
55 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 6

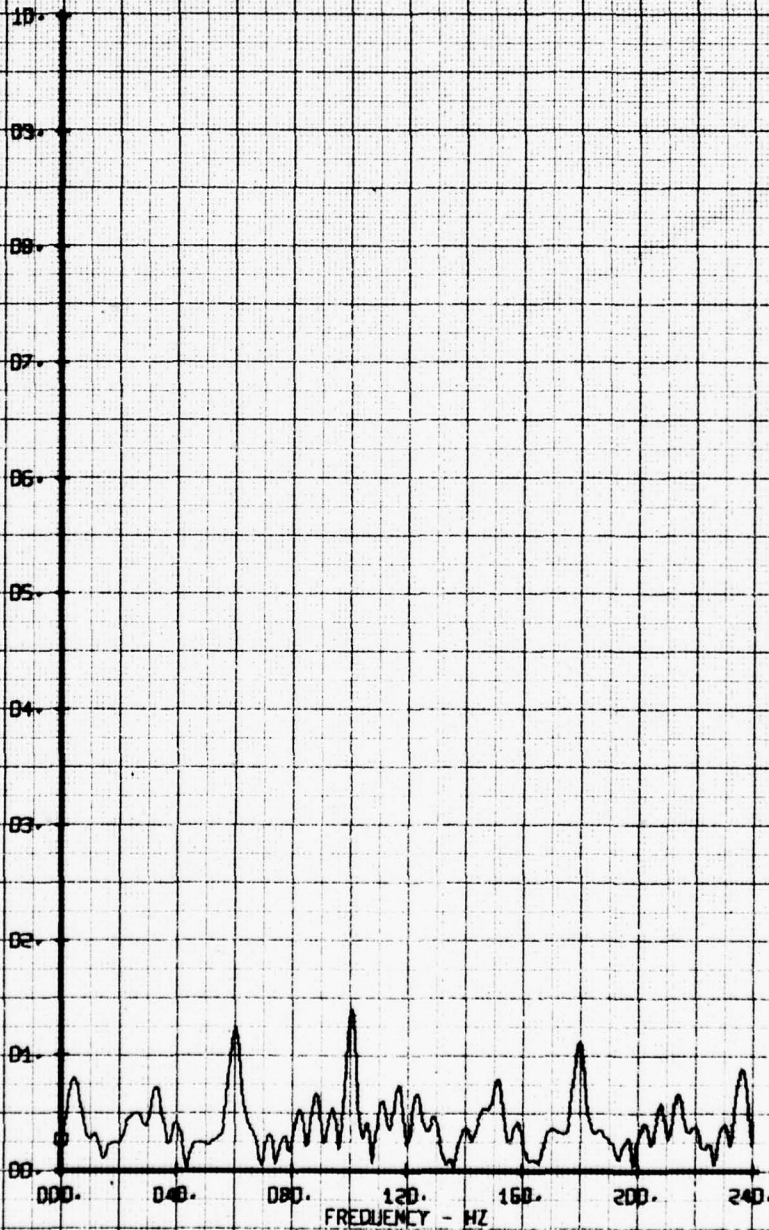
LEGEND
CH 65 PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 2

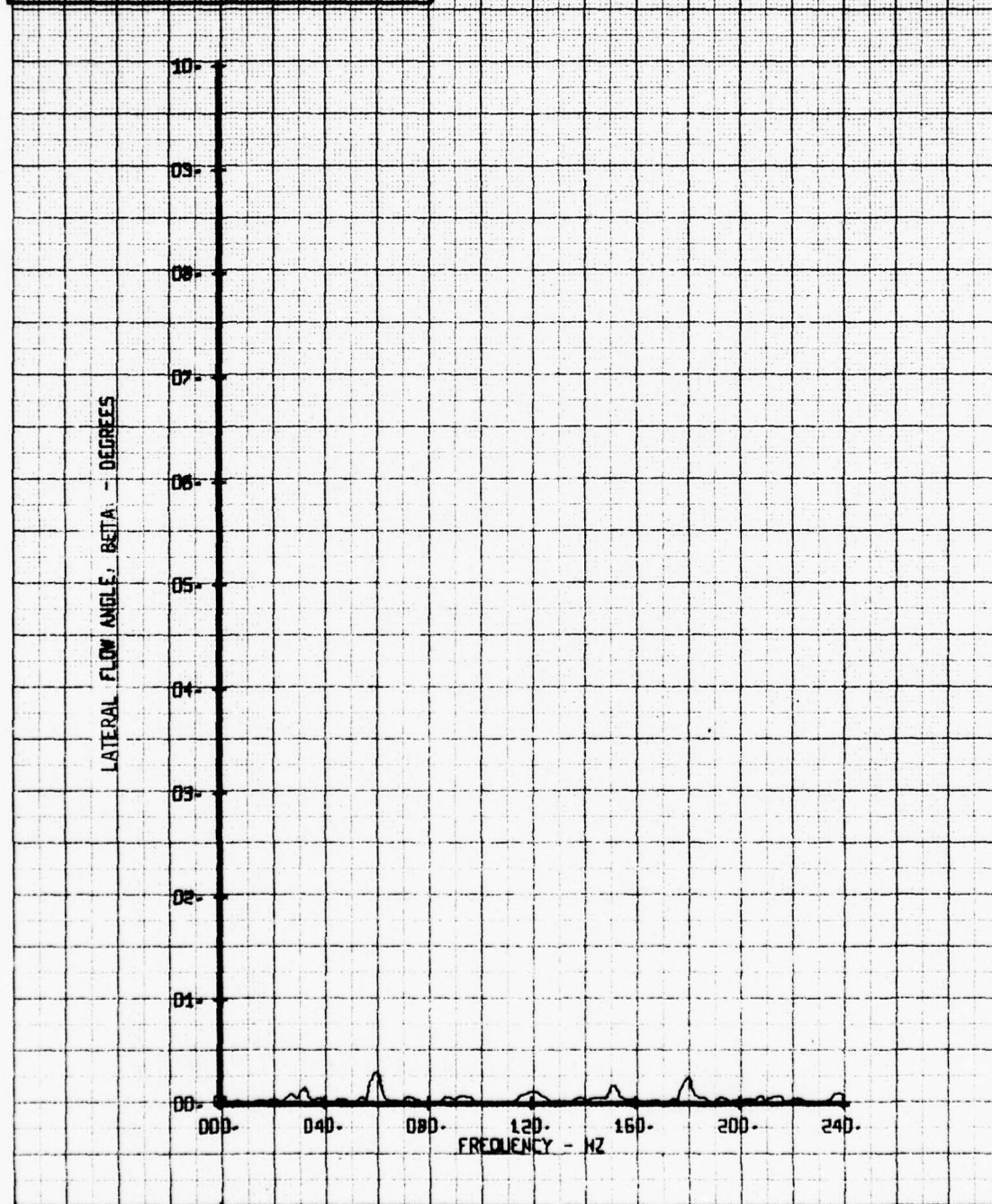
LEGEND
 CN PARAMETER
 BS BETA

LATERAL FLOW ANGLE, BETA - DEGREES



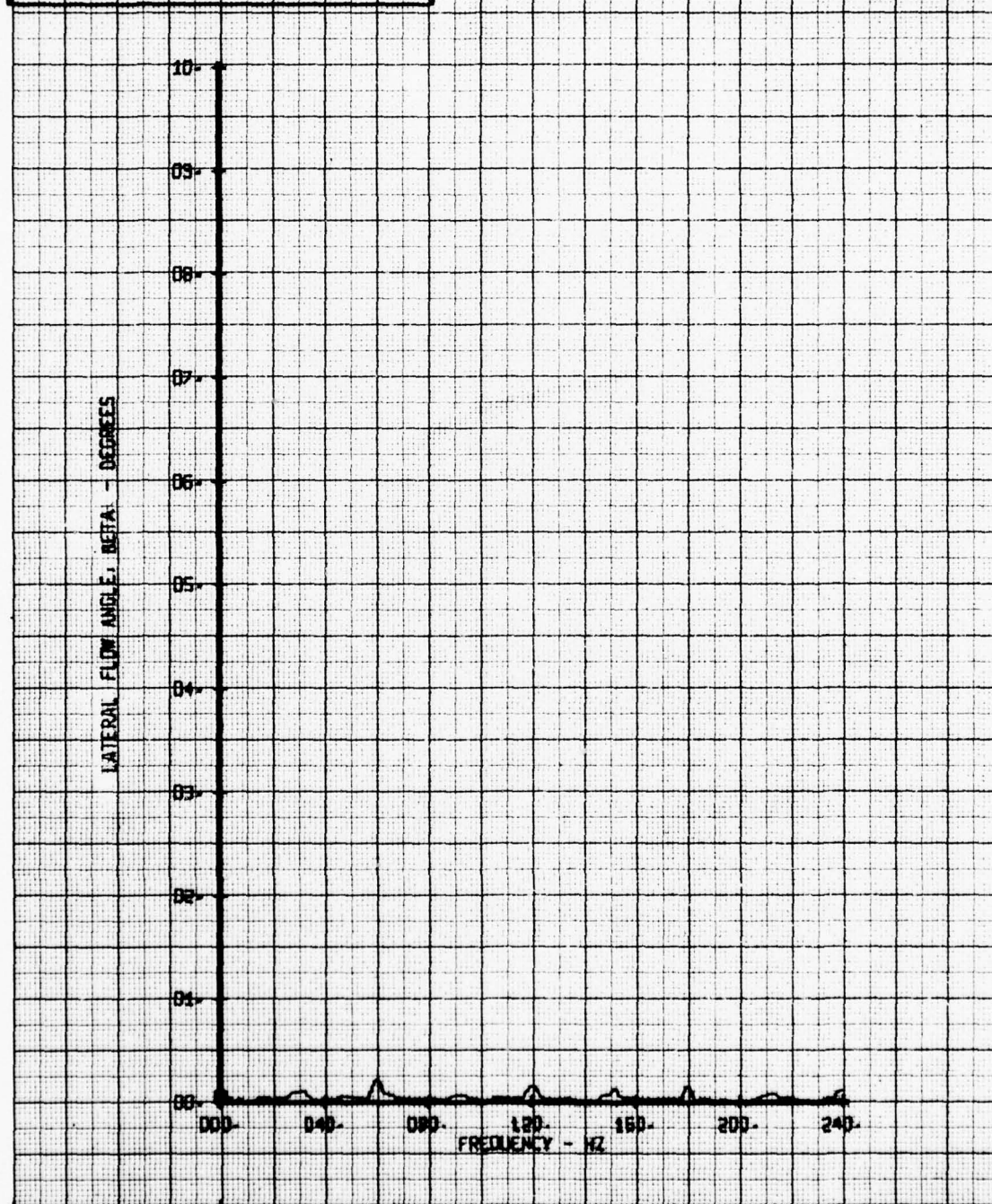
NOT FILM WAVE FREQUENCY ANALYSIS
 CASE RUN - EFF OF WING - MUSE COVERG
 RUN 181 TP 3

LEGEND
 CH PARAMETER
 55 BETA



NOT FILM WAVE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 10

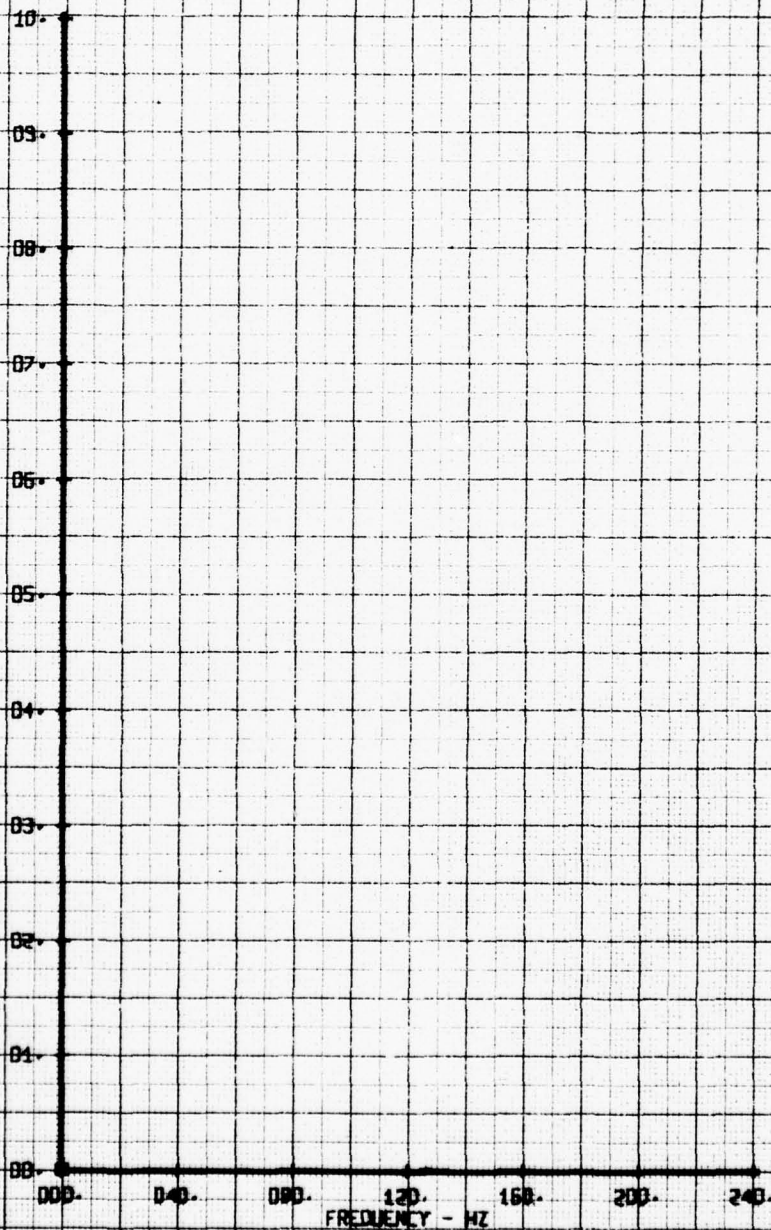
LEGEND
 CH 65
 PARAMETER
 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 180 TP 11

LEGEND
CH 65
PARAMETER
BETA

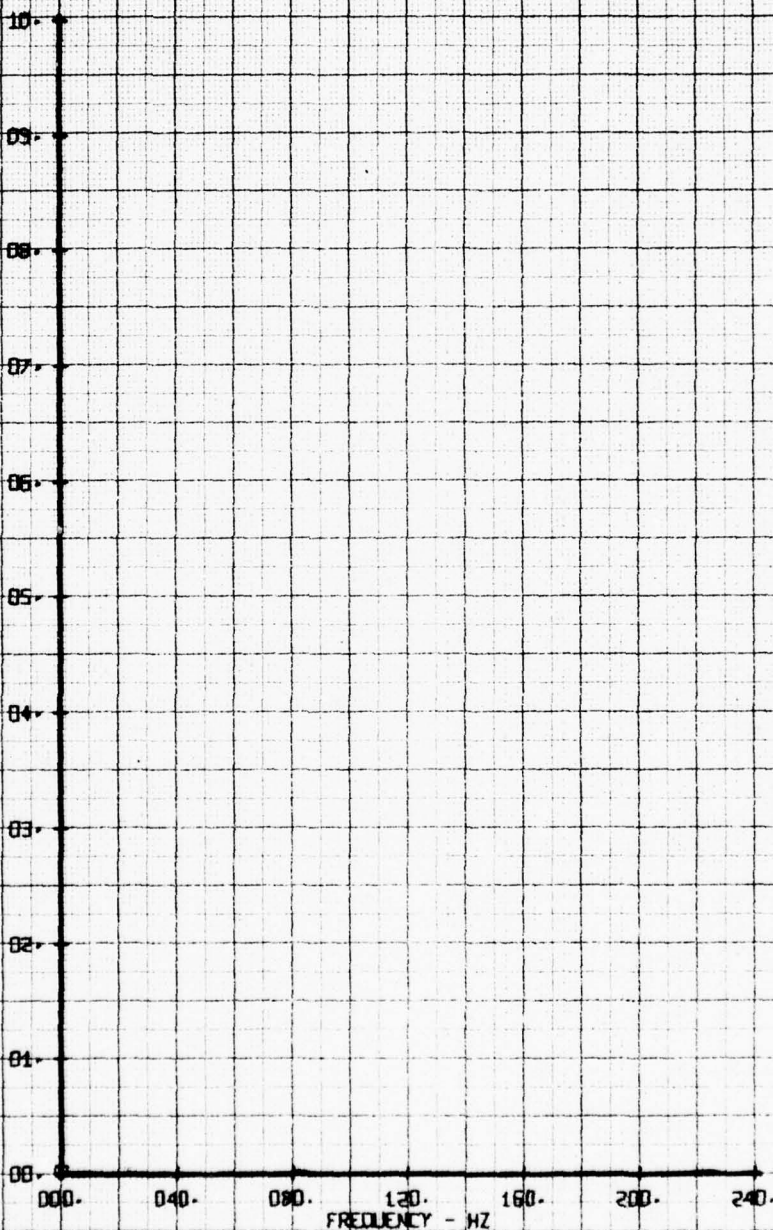
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS - HUB COVERS
RUN 101 TP 12

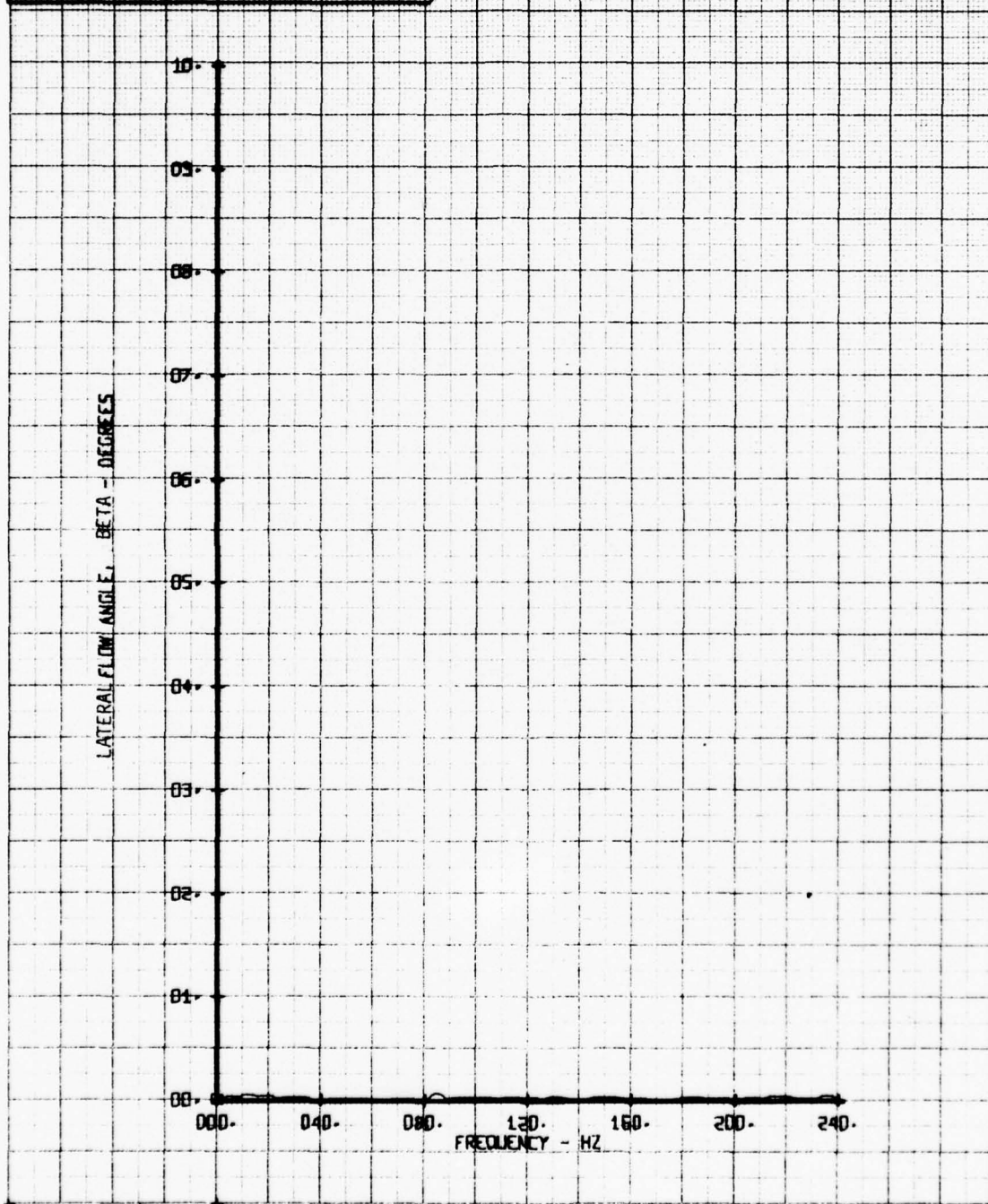
LEGEND
CH 65
PARAMETER
BETA

LATERAL FLOW ANGLE, BETA - DEGREES



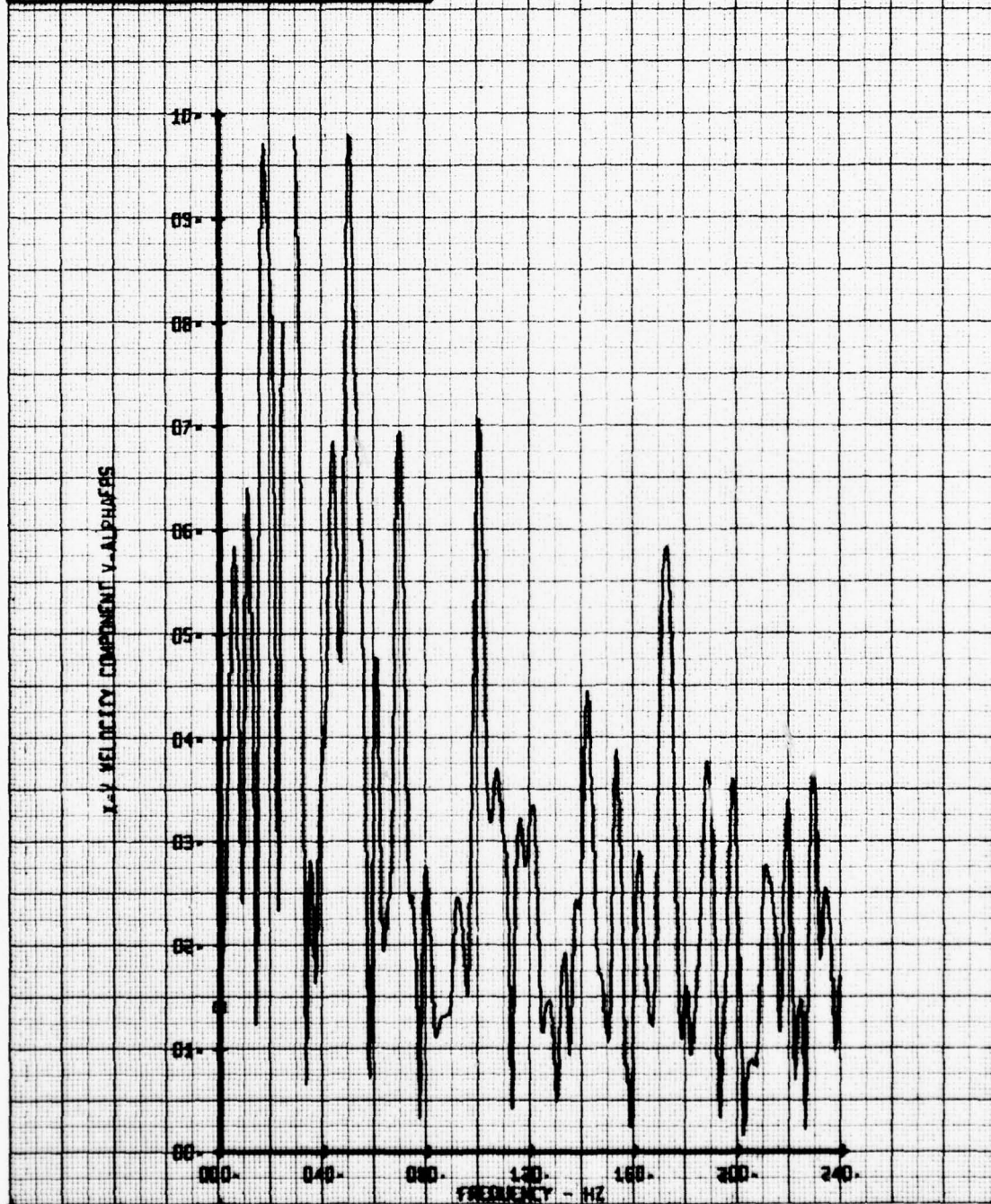
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 13

LEGEND
CH PARAMETER
65 BETA



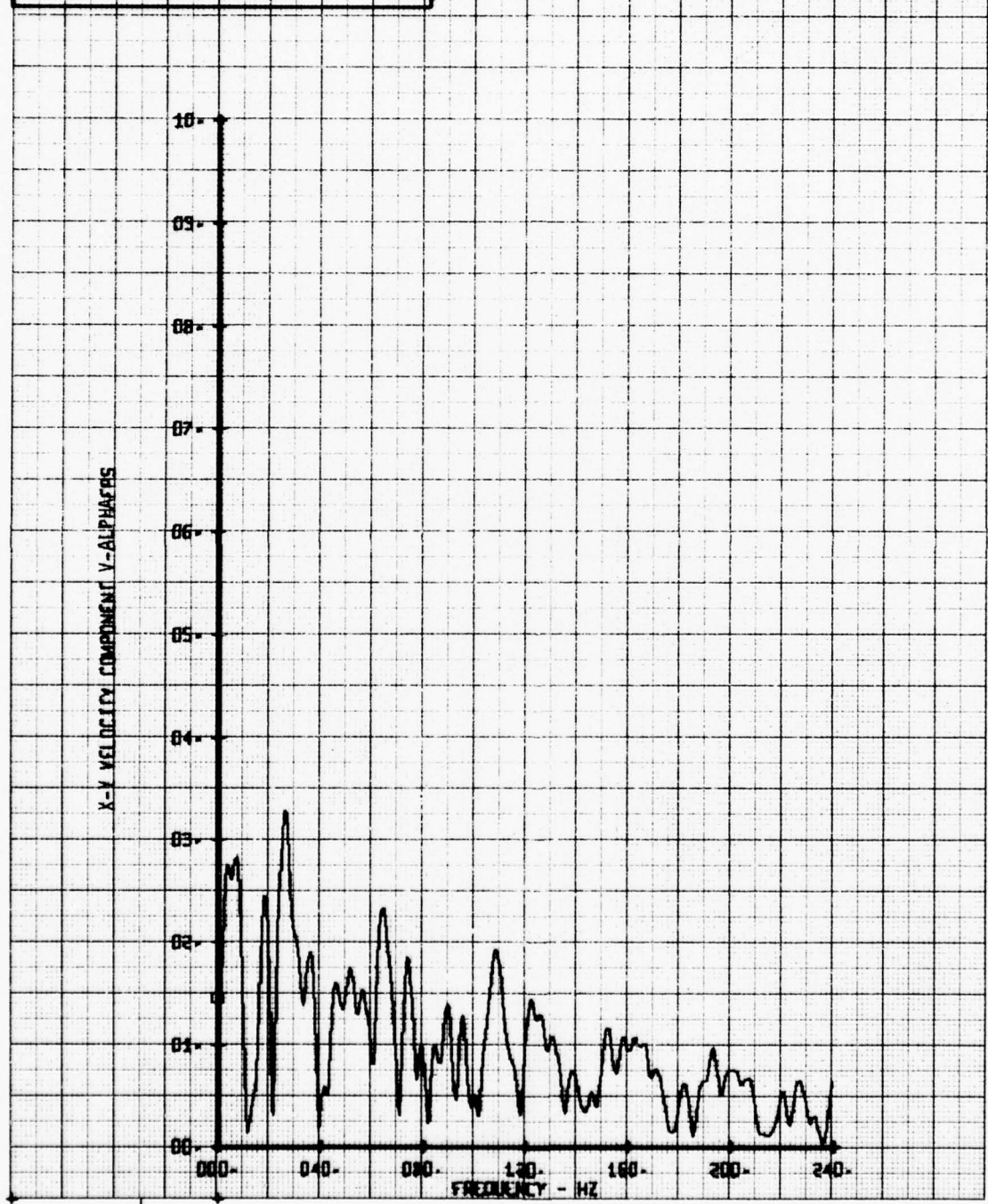
HOT FILM WAVE FREQUENCY ANALYSIS
 BASE RUN - CSE OF WINGS HUB COVERS
 RUN 181 TP 2

LEGEND
 CH PARAMETER
 66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 3

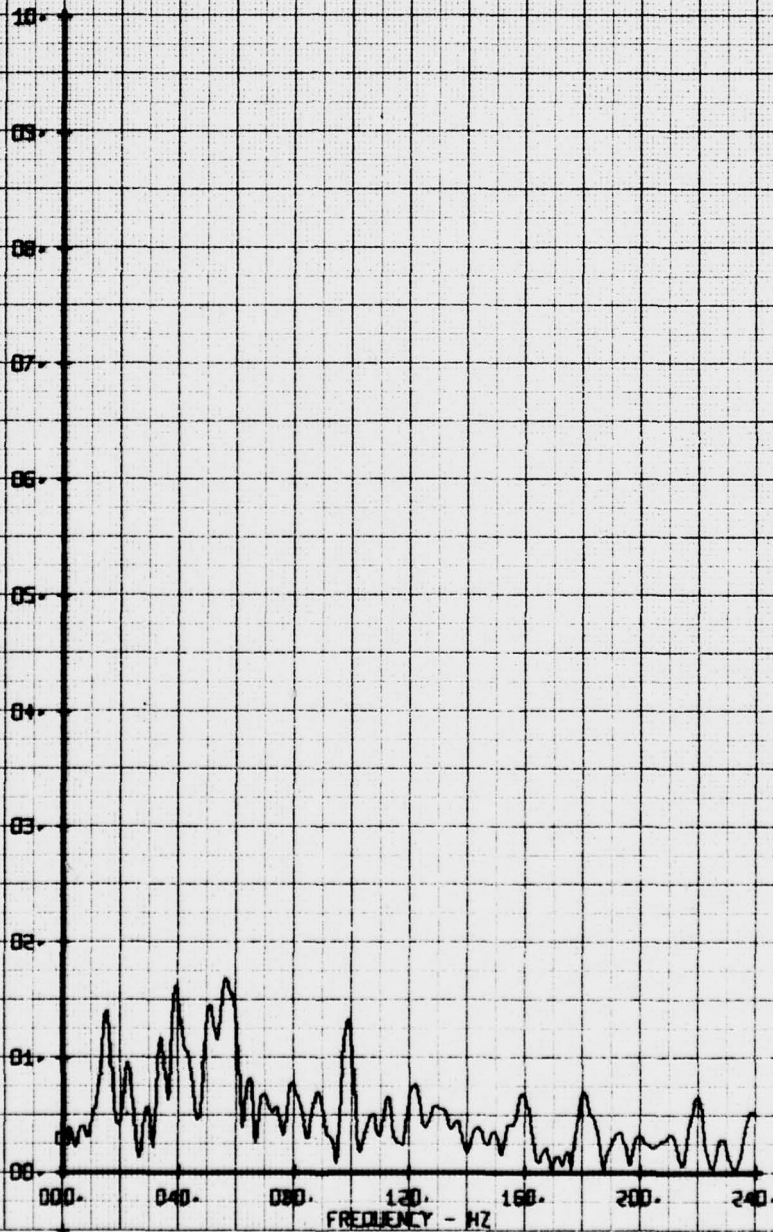
LEGEND
CH 66
PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 101 TP 4

LEGEND
CH PARAMETER
66 V-ALPHA

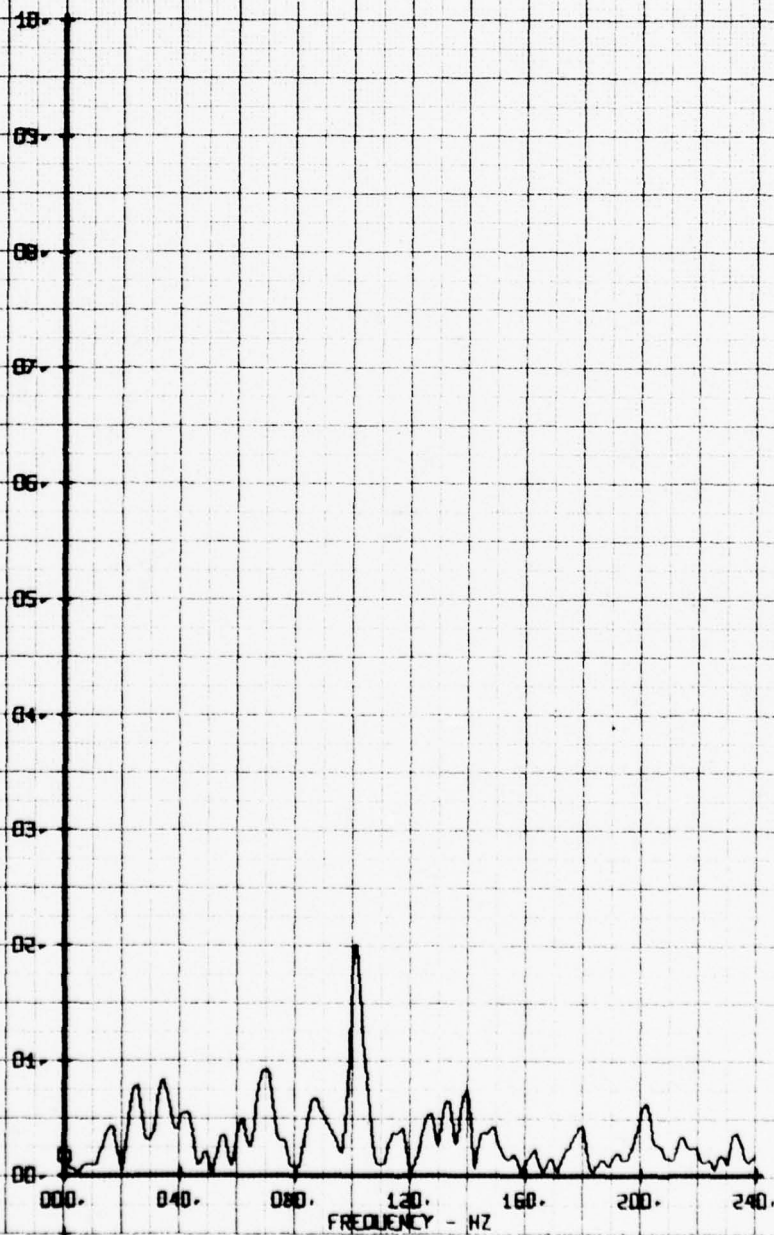
X-Y: VELOCITY COMPONENT V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 101 TP 5

LEGEND
CH 66
PARAMETER
V-ALPHA

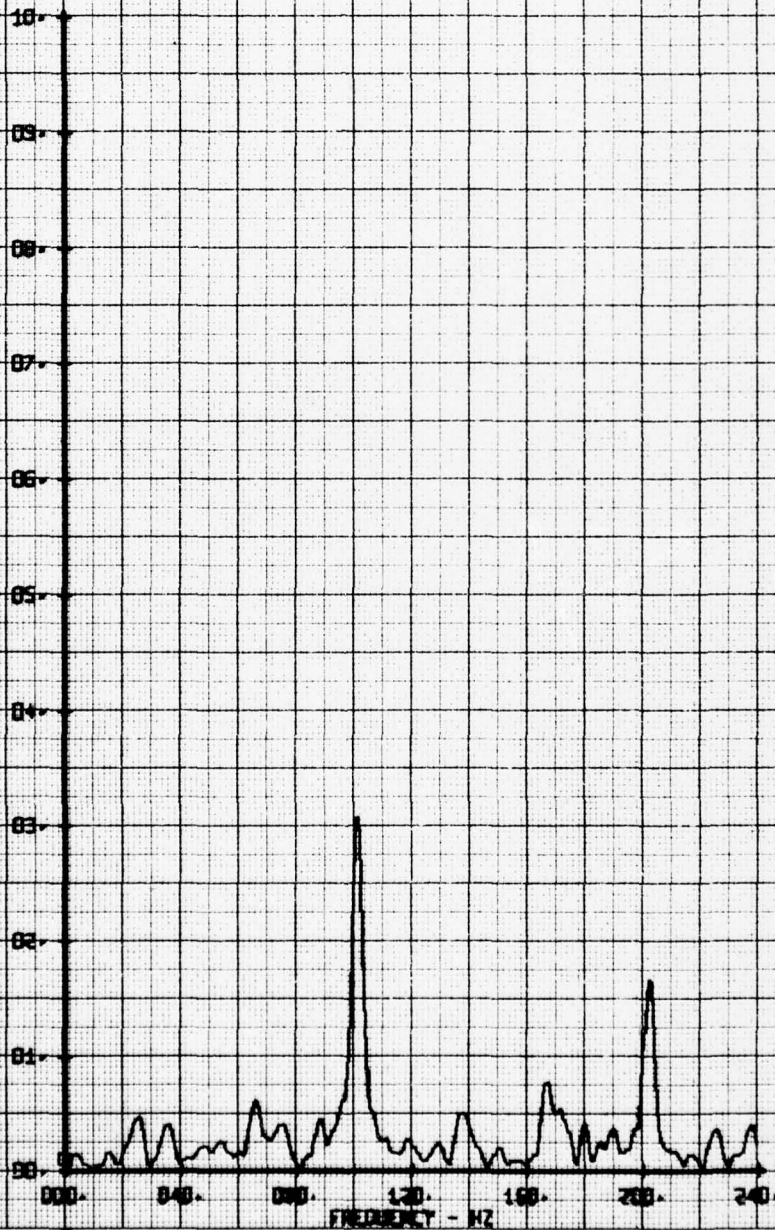
X-Y VELOCITY COMPONENT V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 6

LEGEND
 CH PARAMETER
 66 V-ALPHA

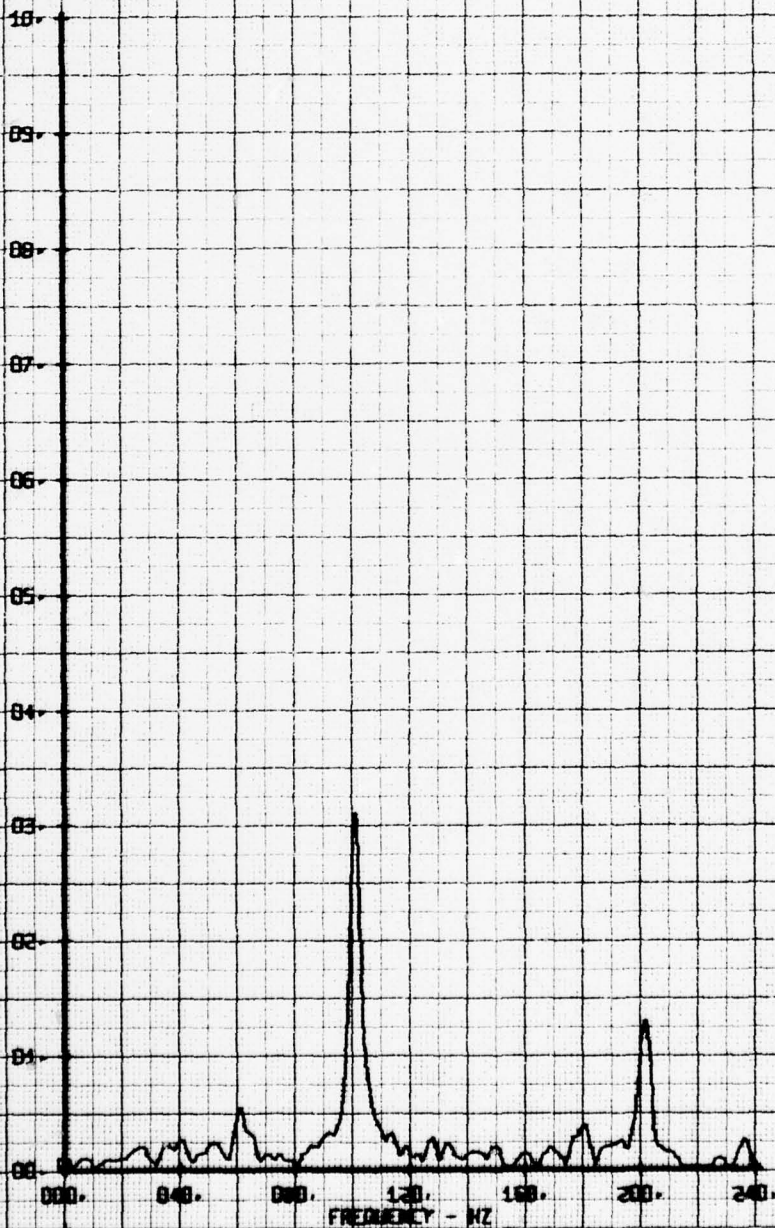
X-Y VELOCITY COMPONENT V-ALPHAS



HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 7

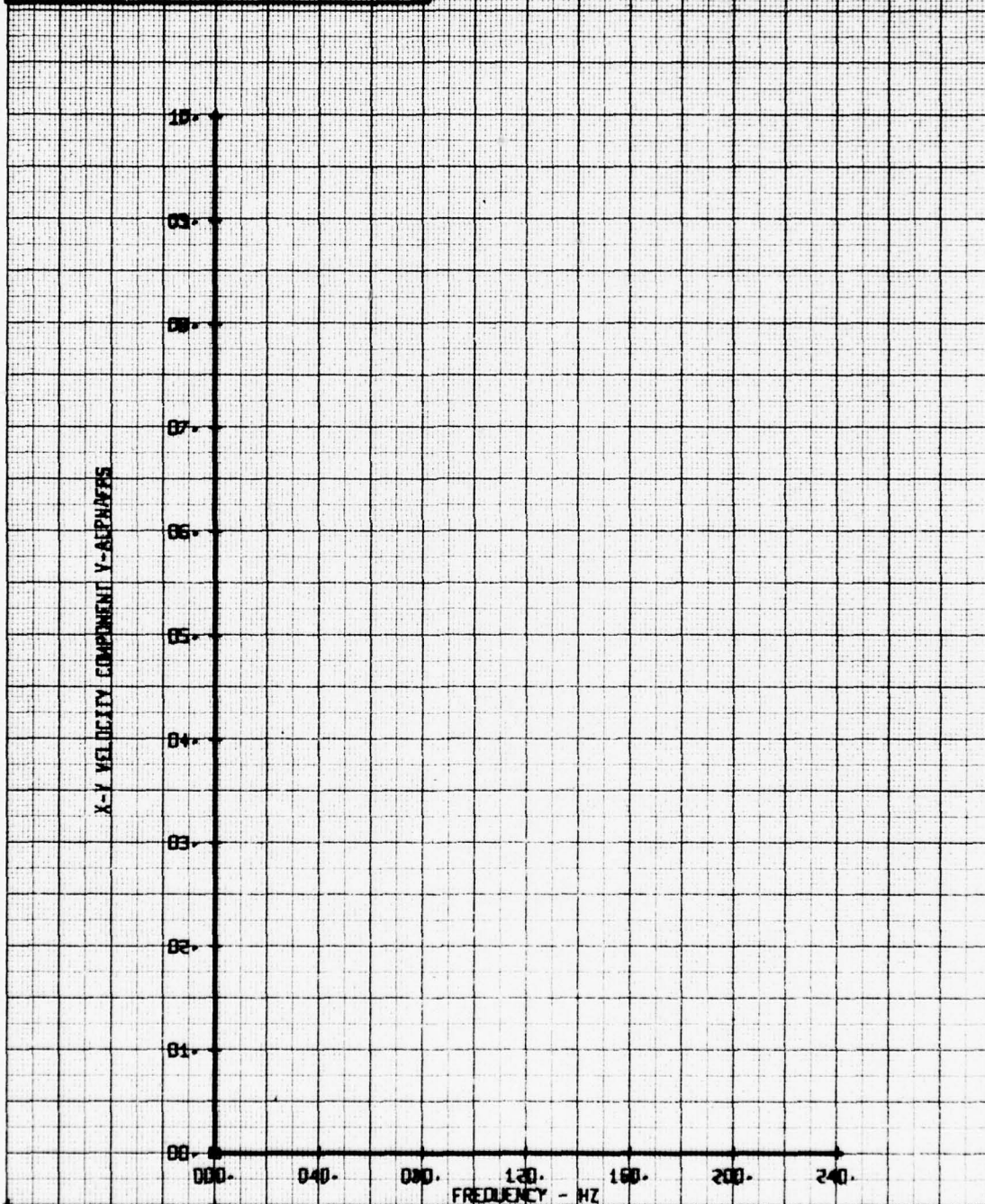
LEGEND
CH 66
PARAMETER
V-ALPHA

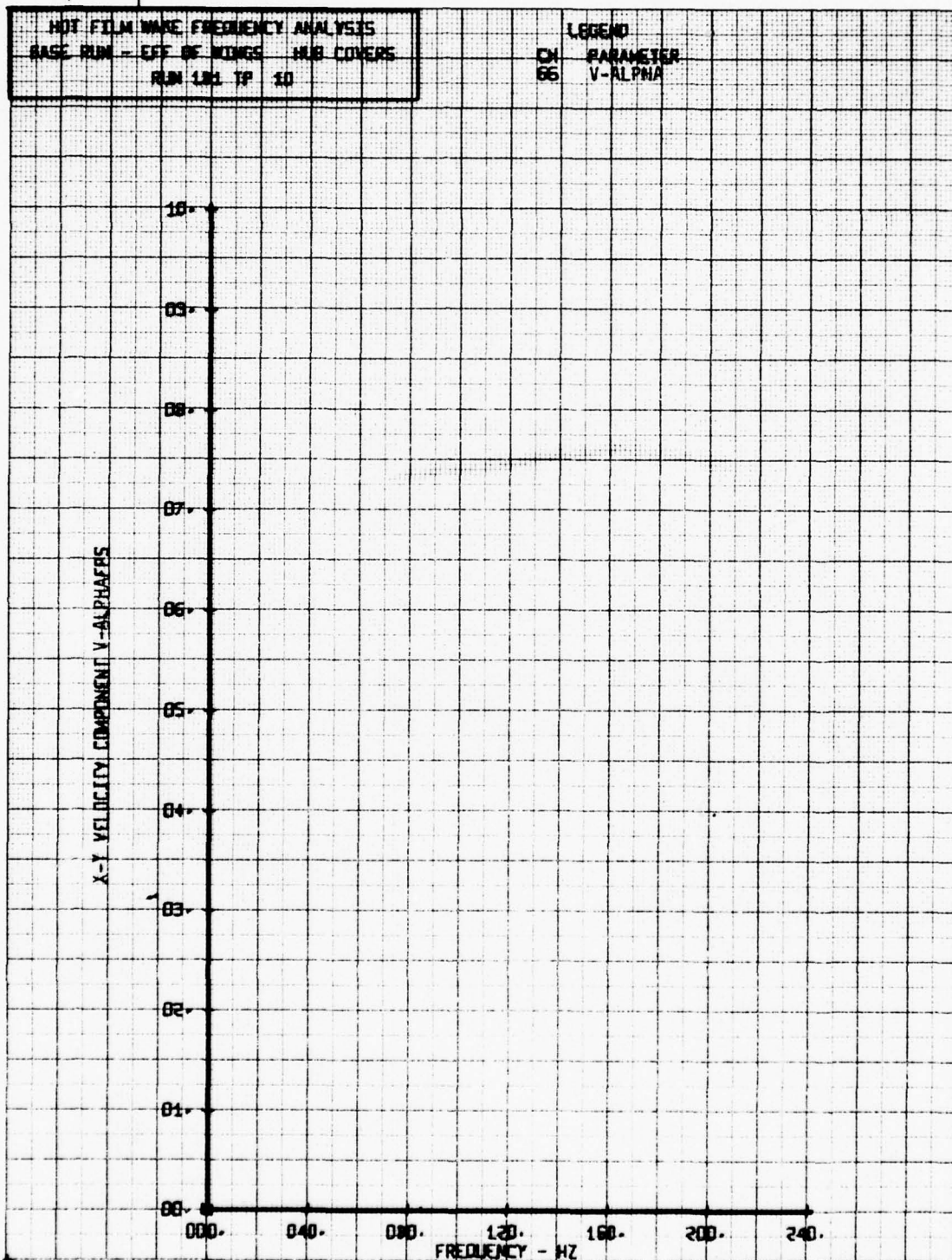
X-V VELOCITY COMPONENT V-ALPHAS



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 101 TP 3

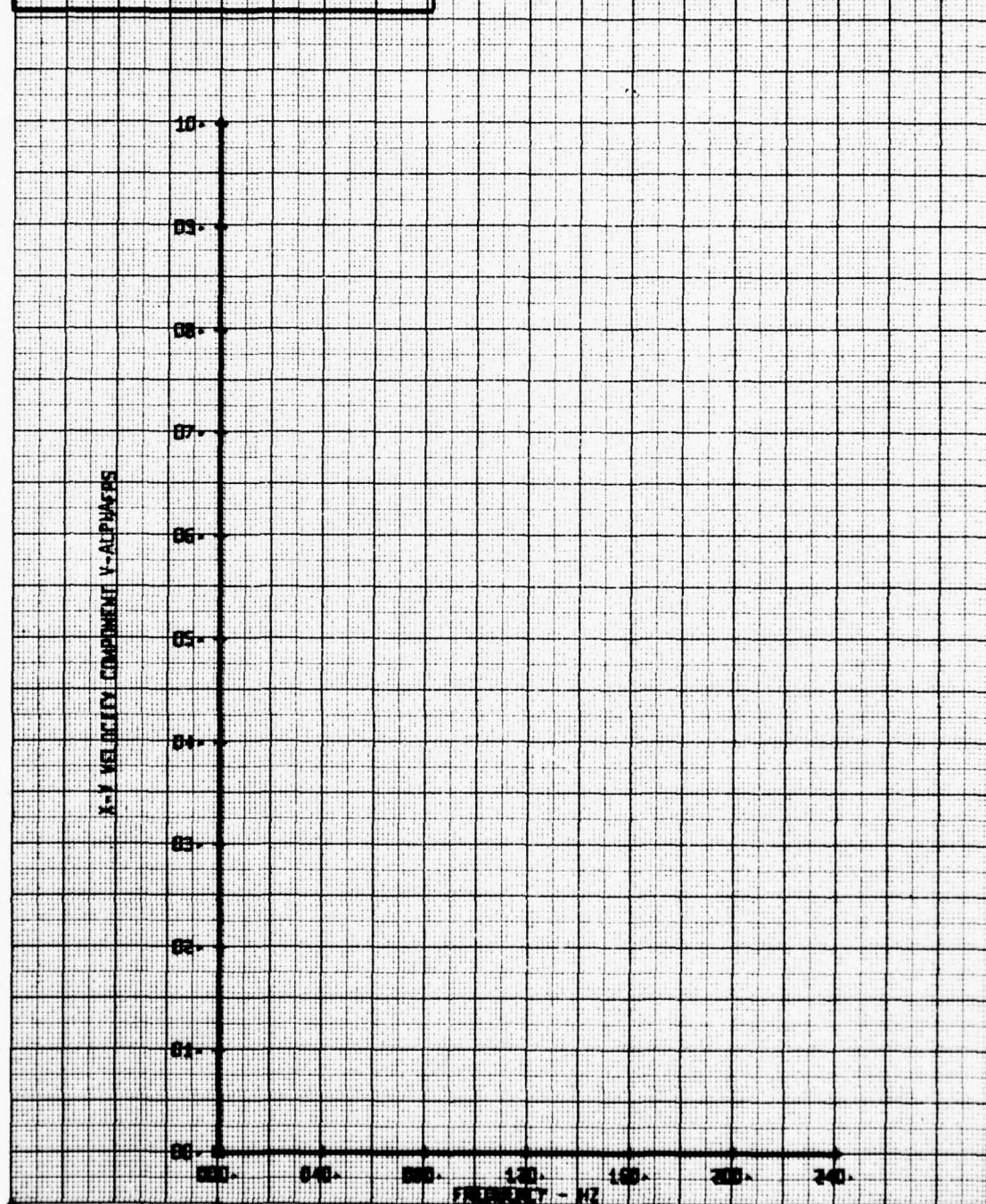
LEGEND
 CH PARAMETER
 66 V-ALPHA





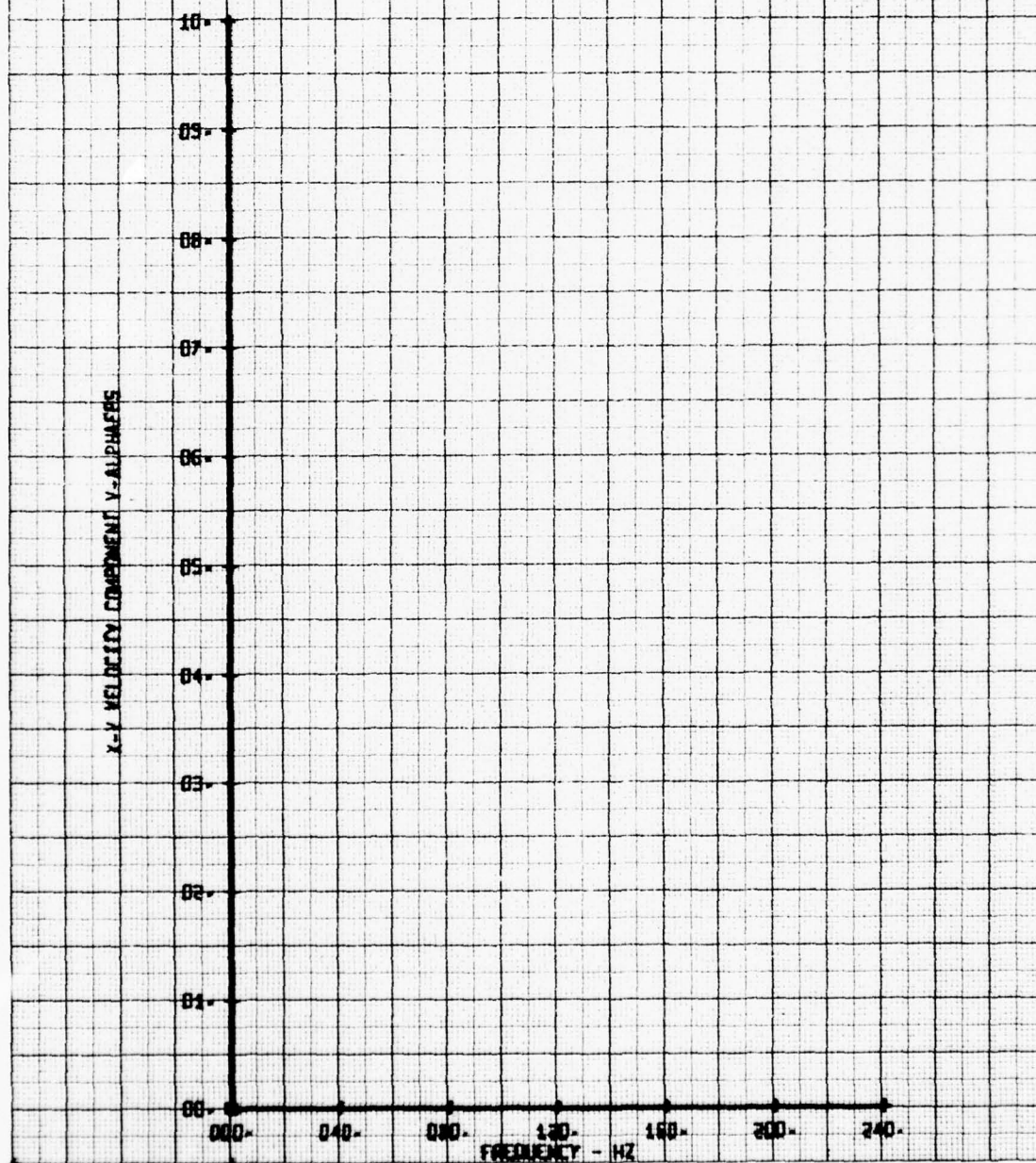
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 121 TP 11

LEGEND
CN PARAMETER
66 V-ALPHA



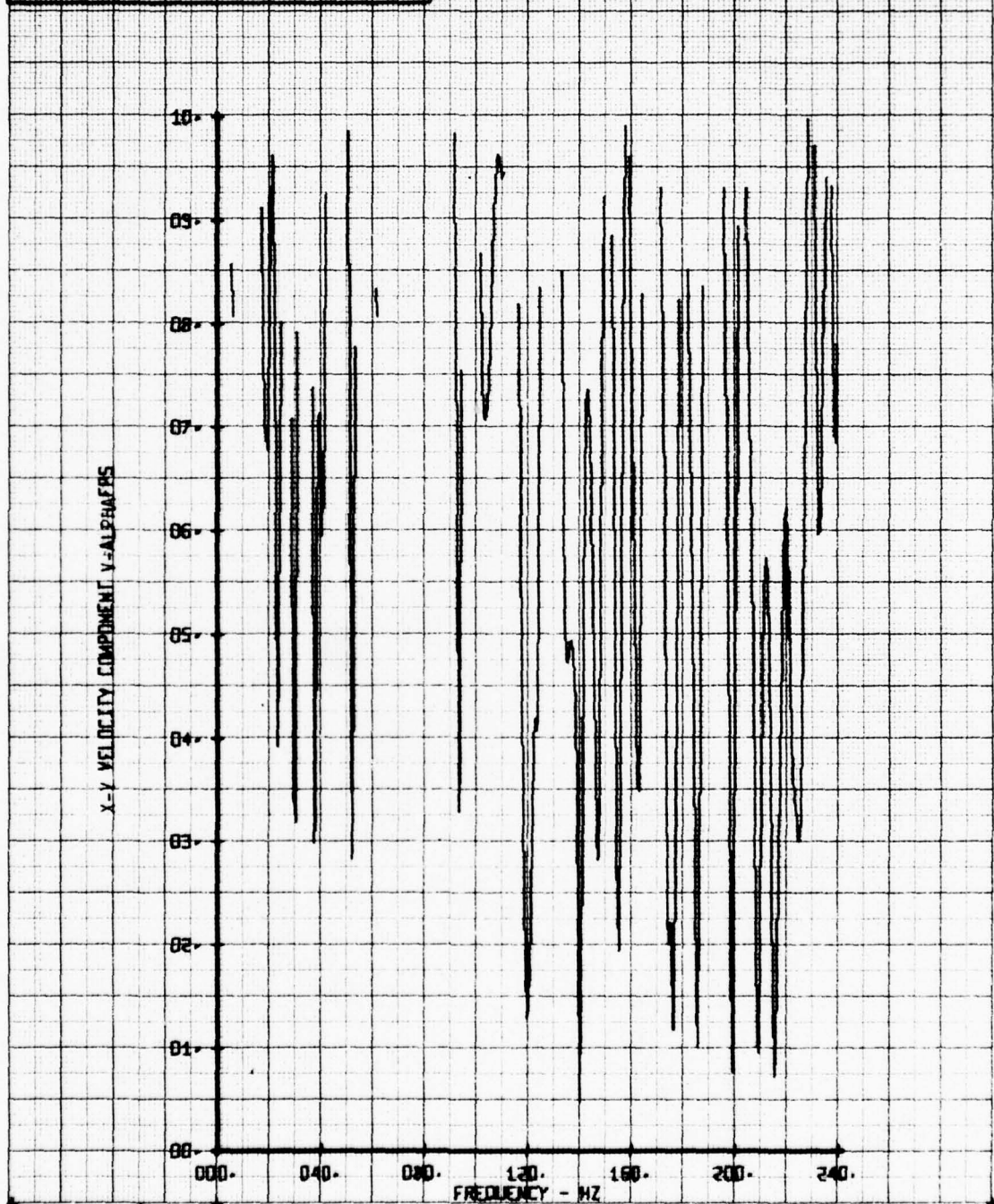
HOT FILM WAKE FREQUENCY ANALYSIS
BASE RUN - EFF OF WINGS HUB COVERS
RUN 181 TP 12

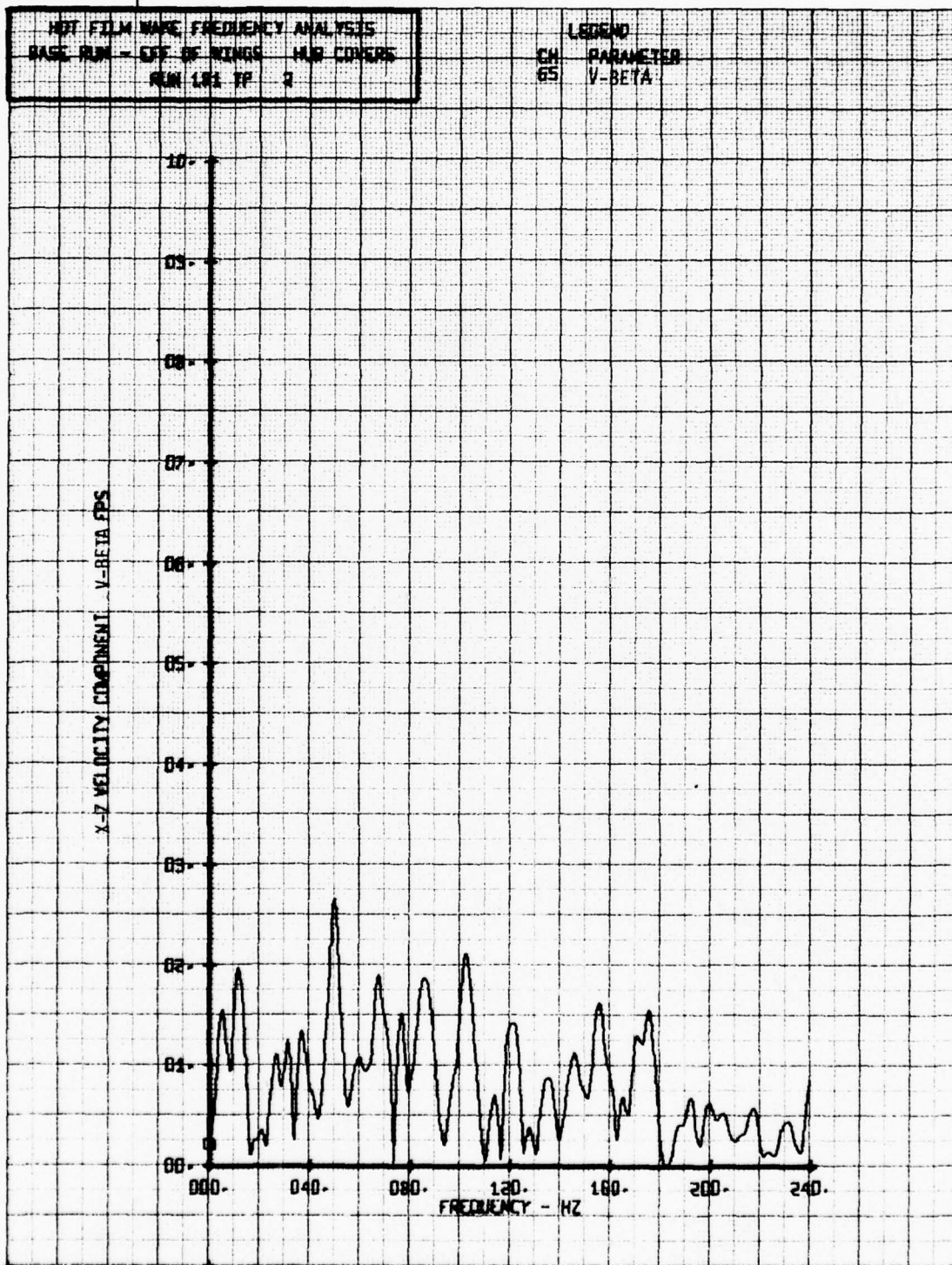
LEGEND
CH 66
PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 13

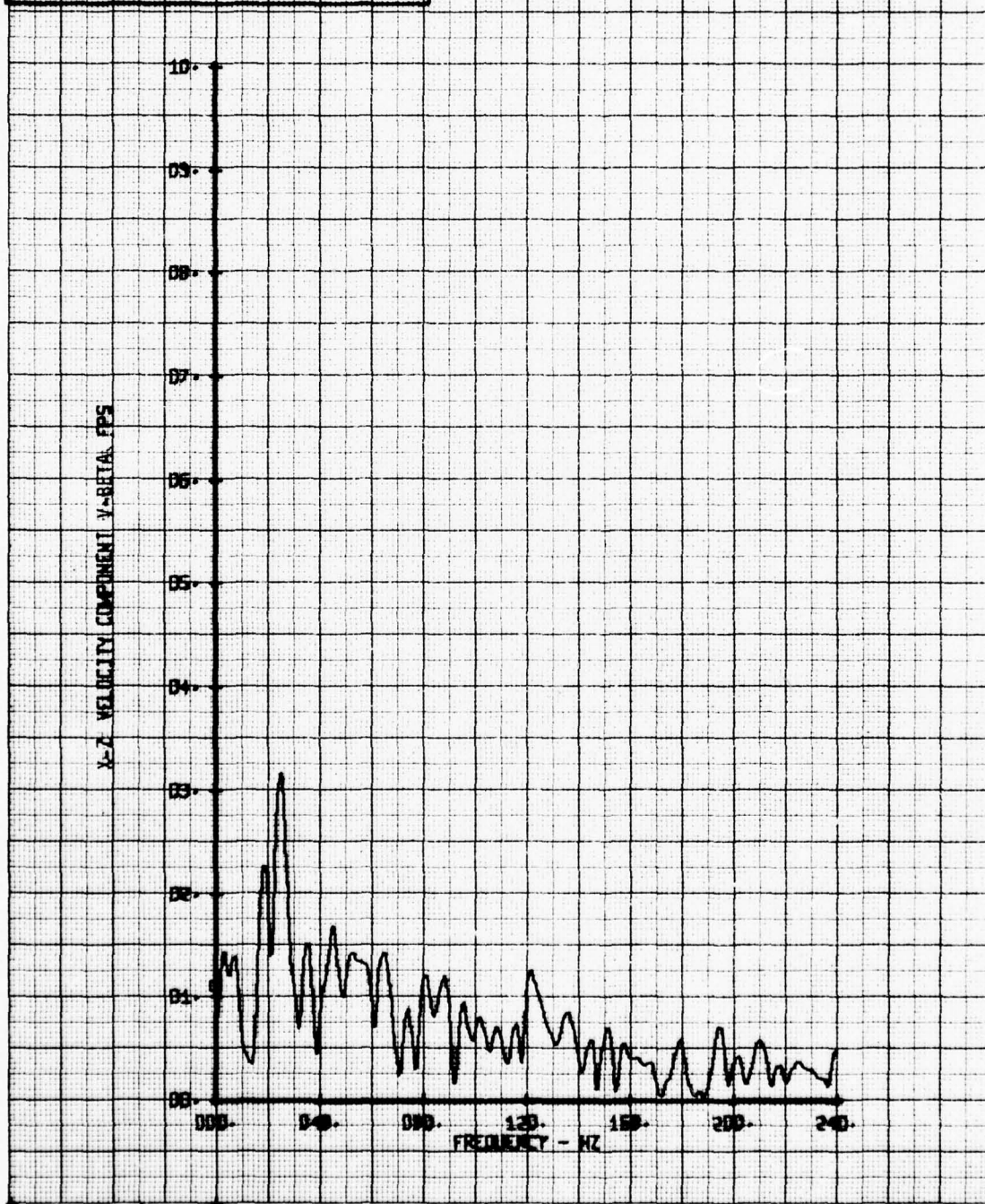
LEGEND
 CH PARAMETER
 66 V-ALPHA





HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 101 TP 3

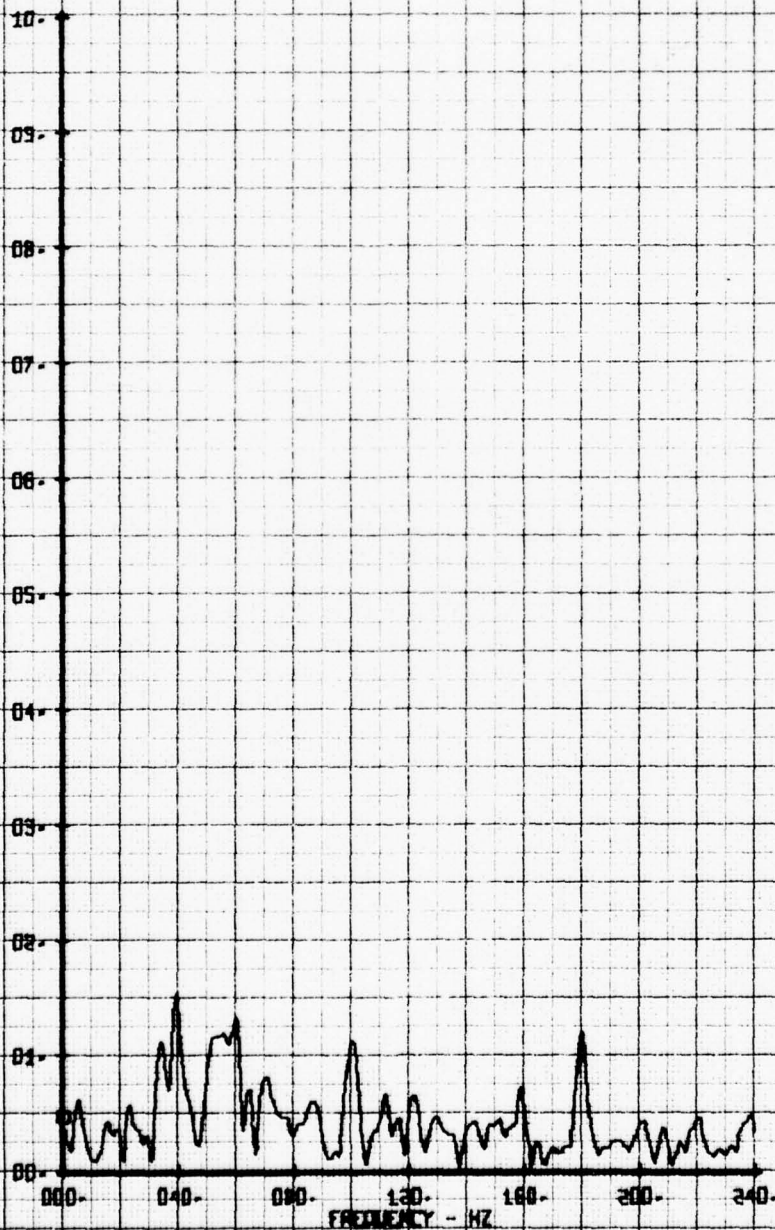
LEGEND
 CH PARAMETER
 BS V-BETA

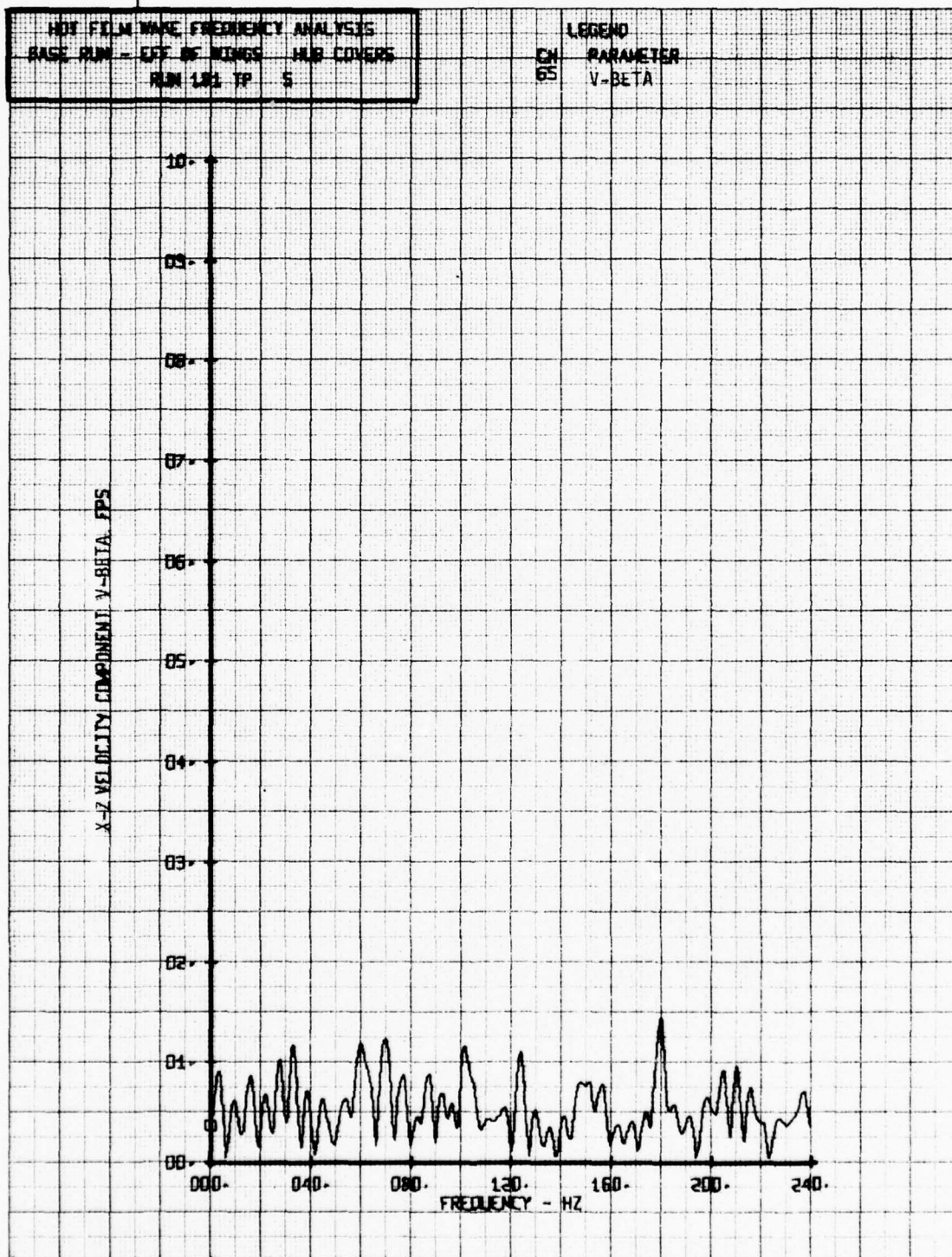


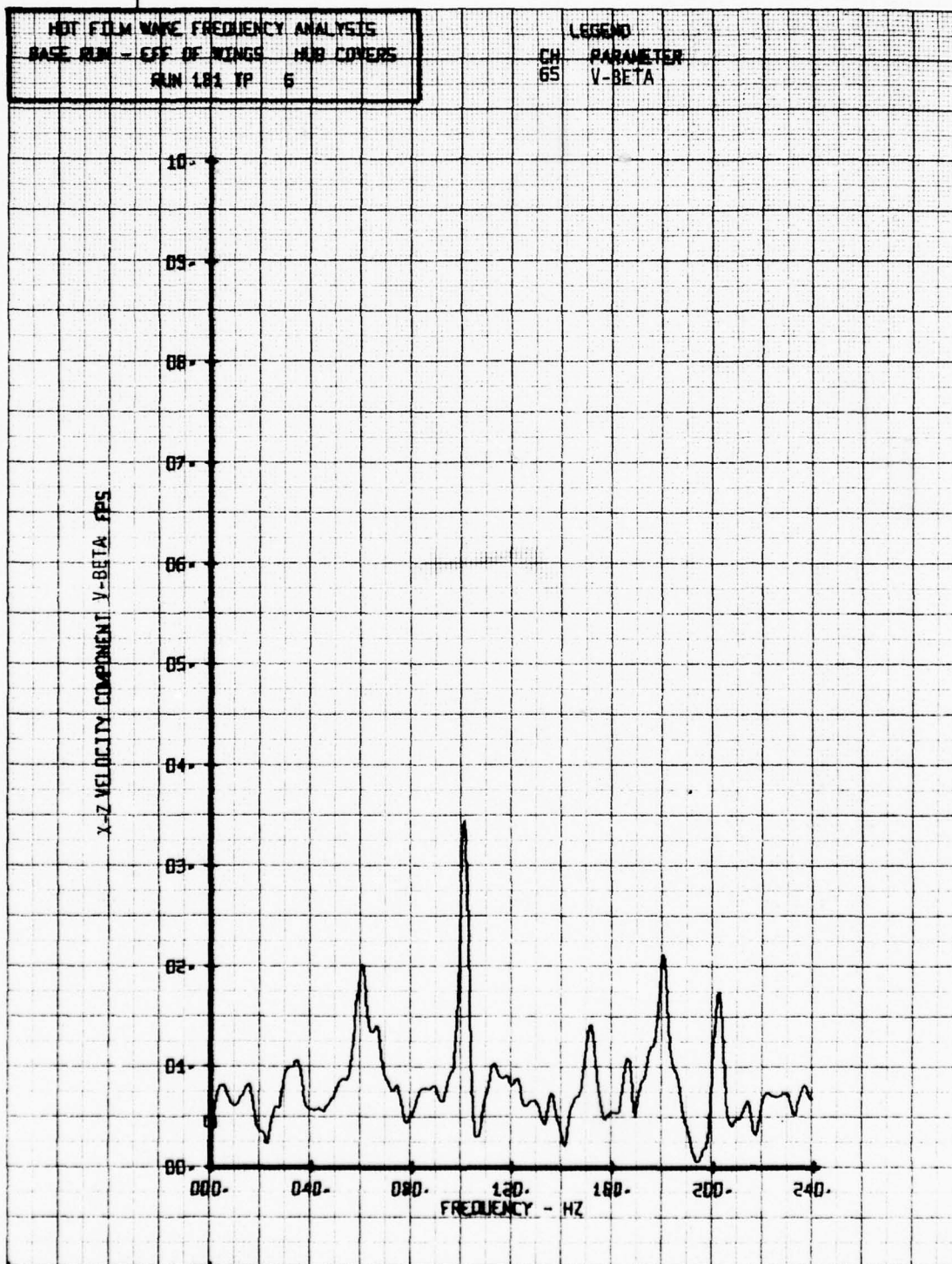
NOT FILM WARE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 4

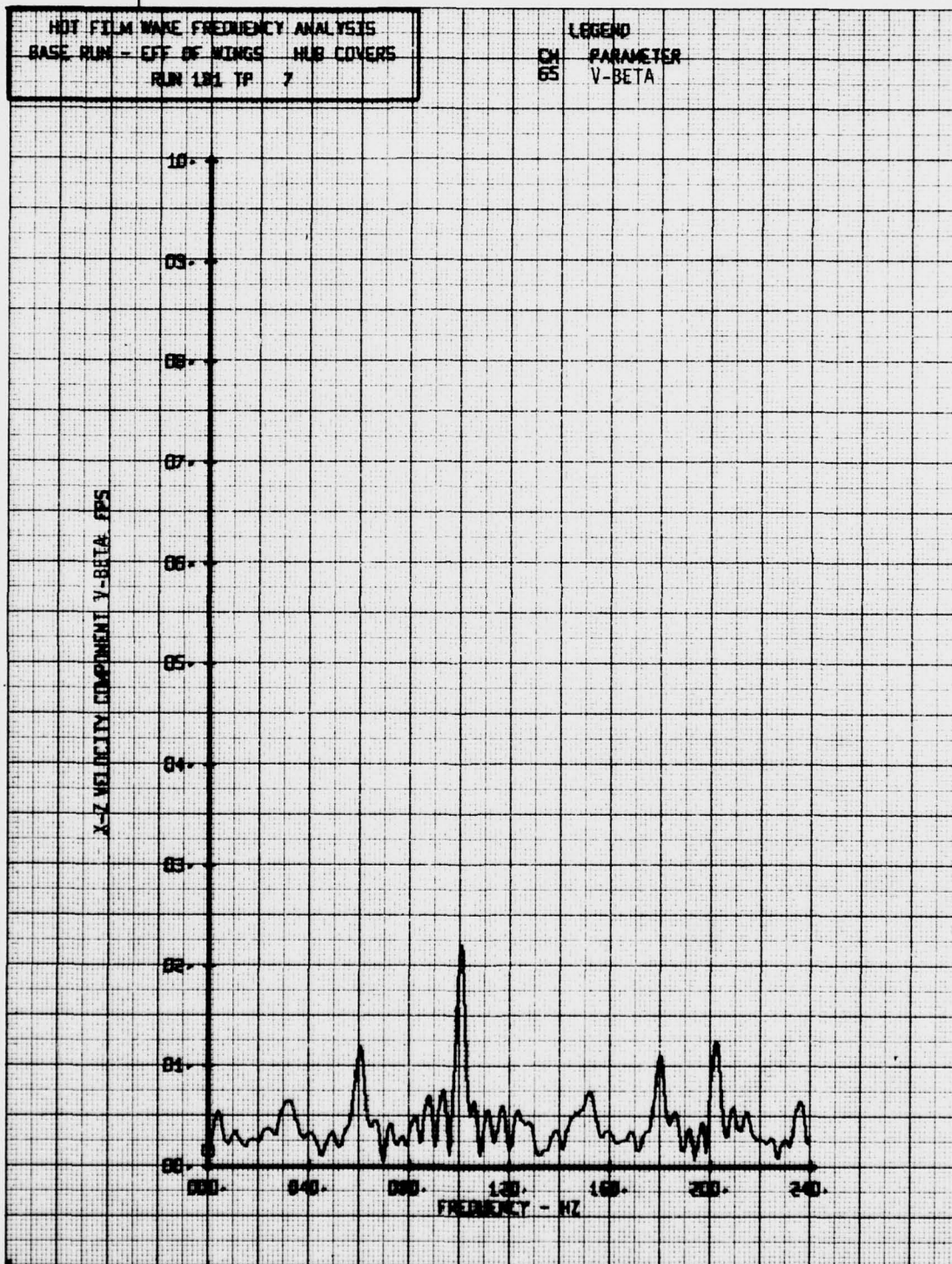
LEGEND
 CH PARAMETER
 65 V-BETA

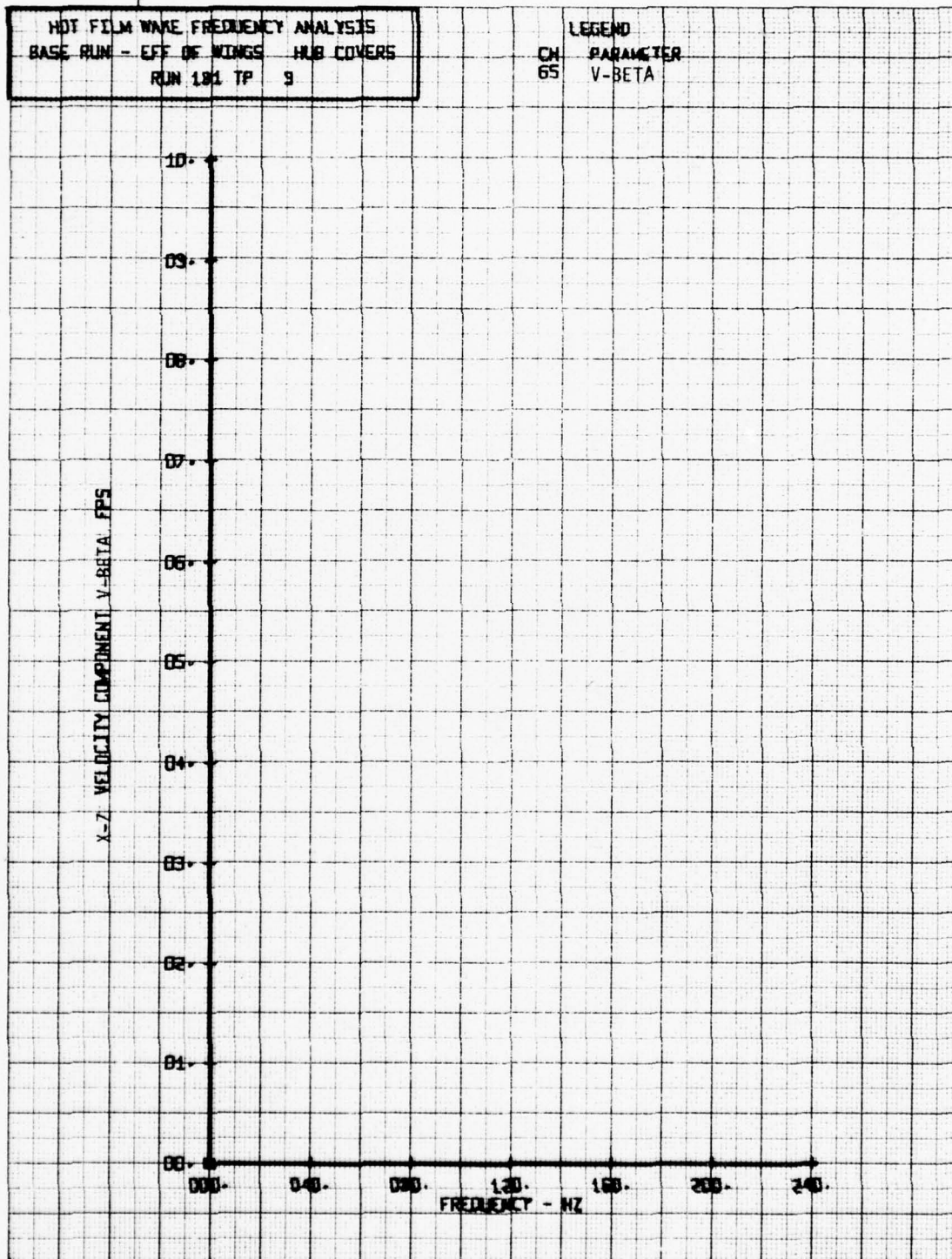
X-Z VELOCITY COMPONENT V-BETA FPS





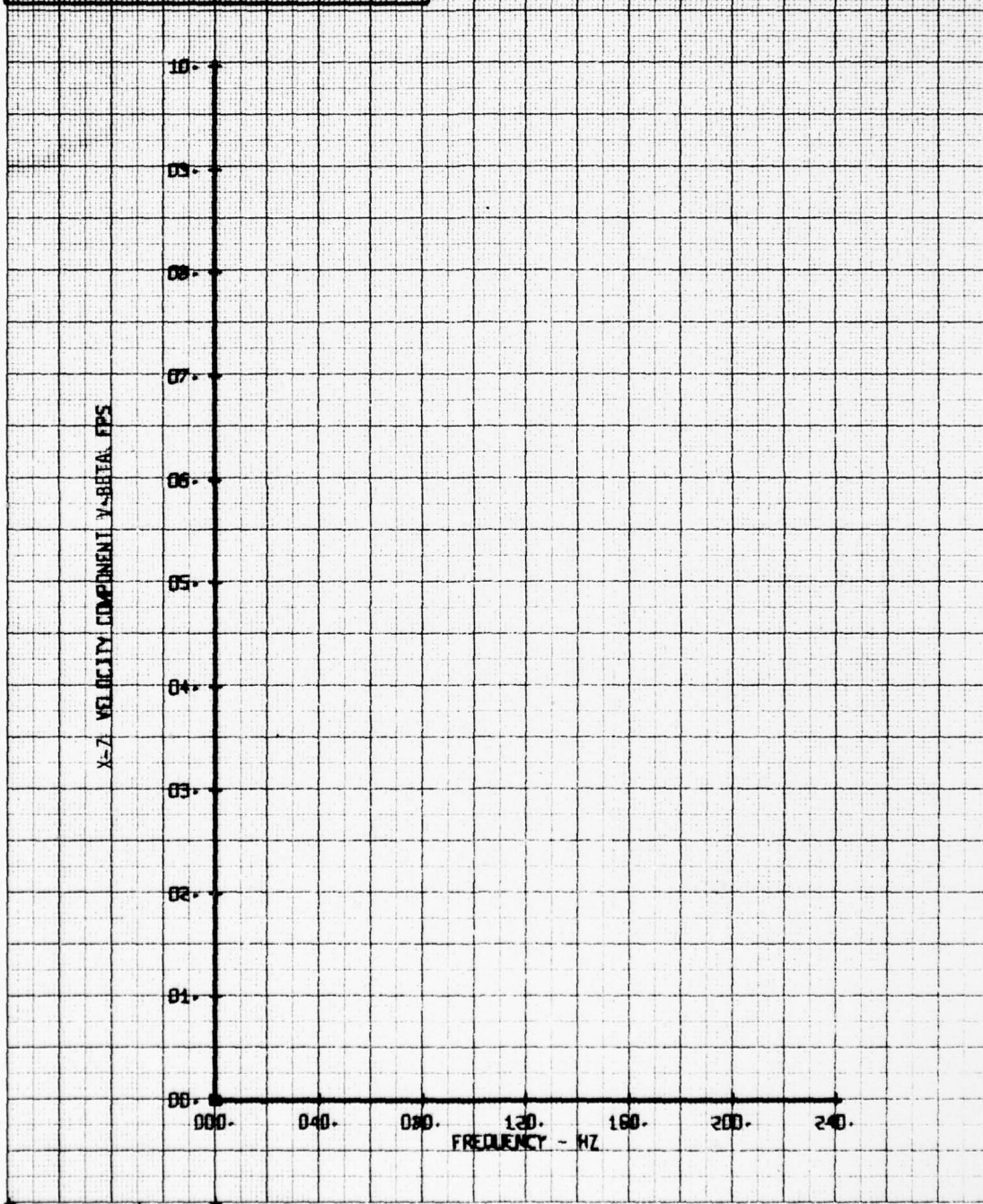


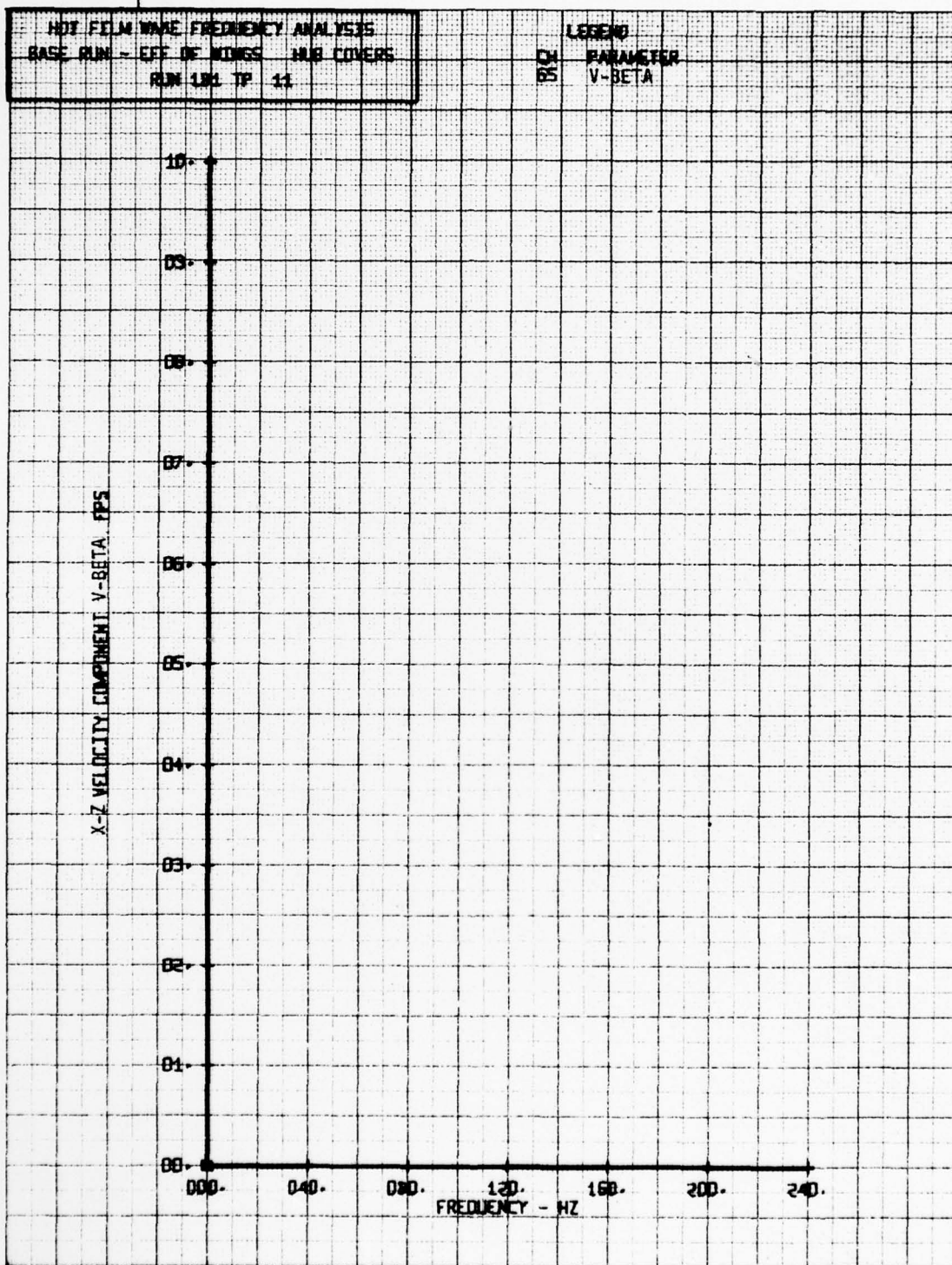


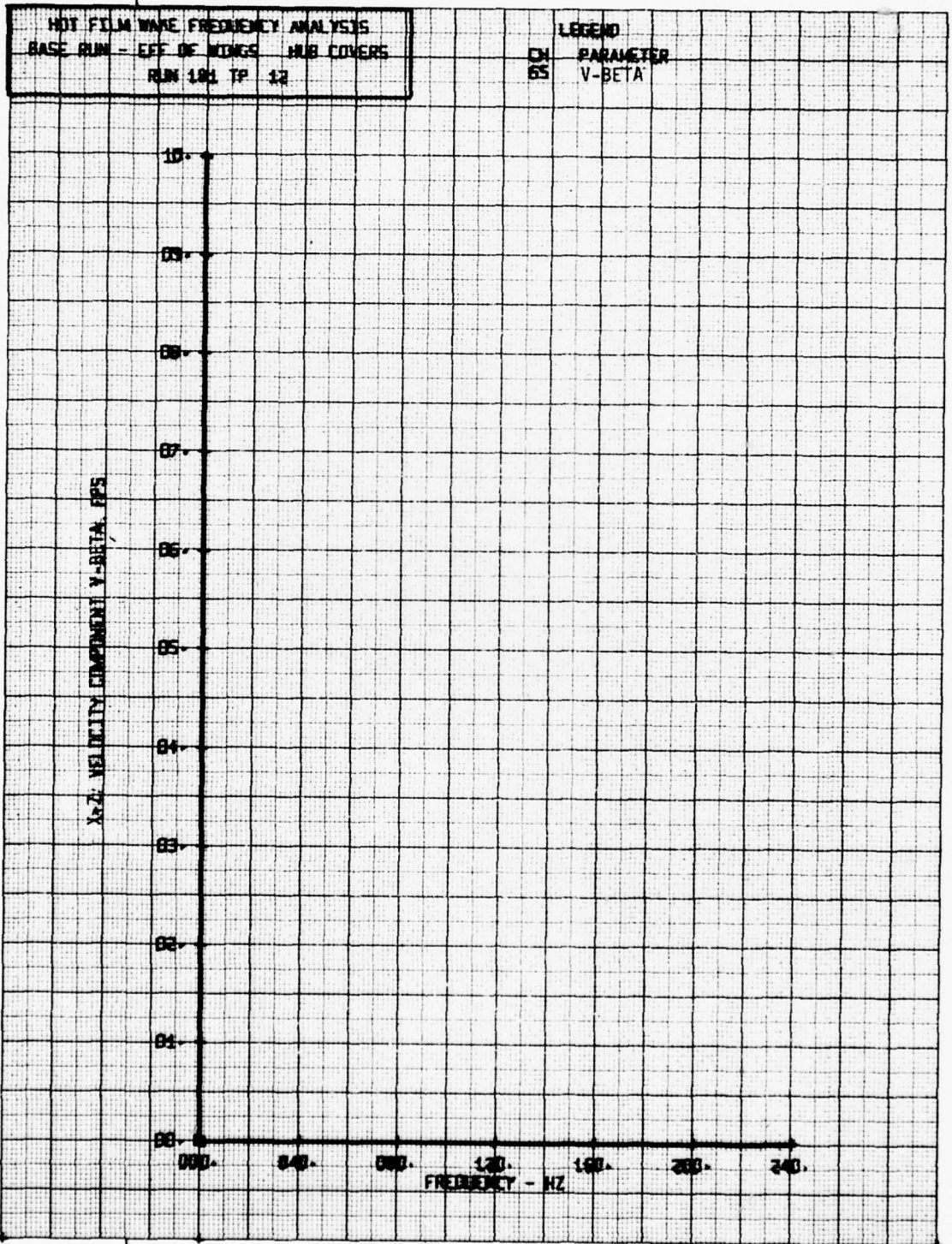


HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS - HUB COVERS
 RUN LMA TP 10

LEGEND
 CH PARAMETER
 BS V-BETA

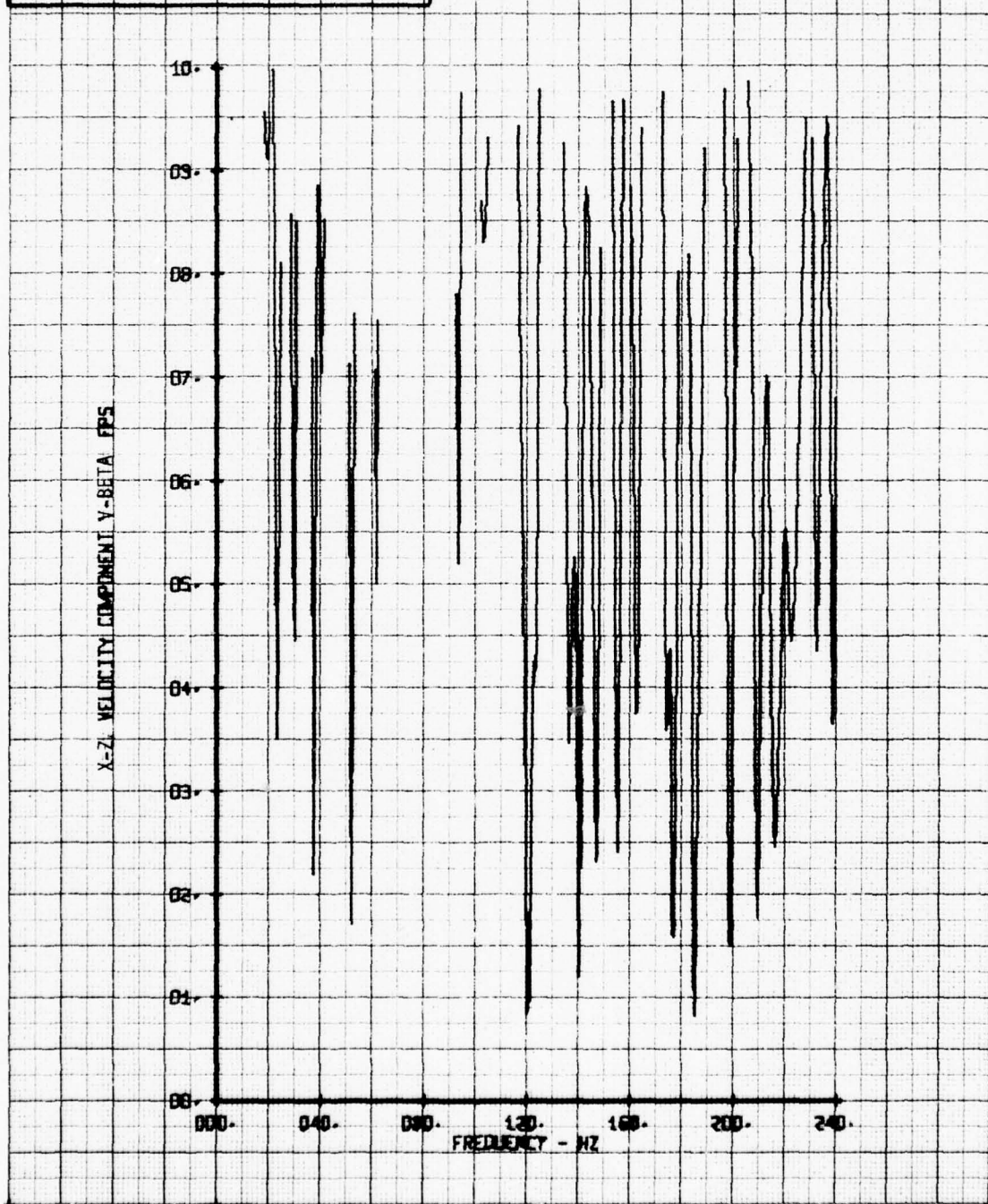






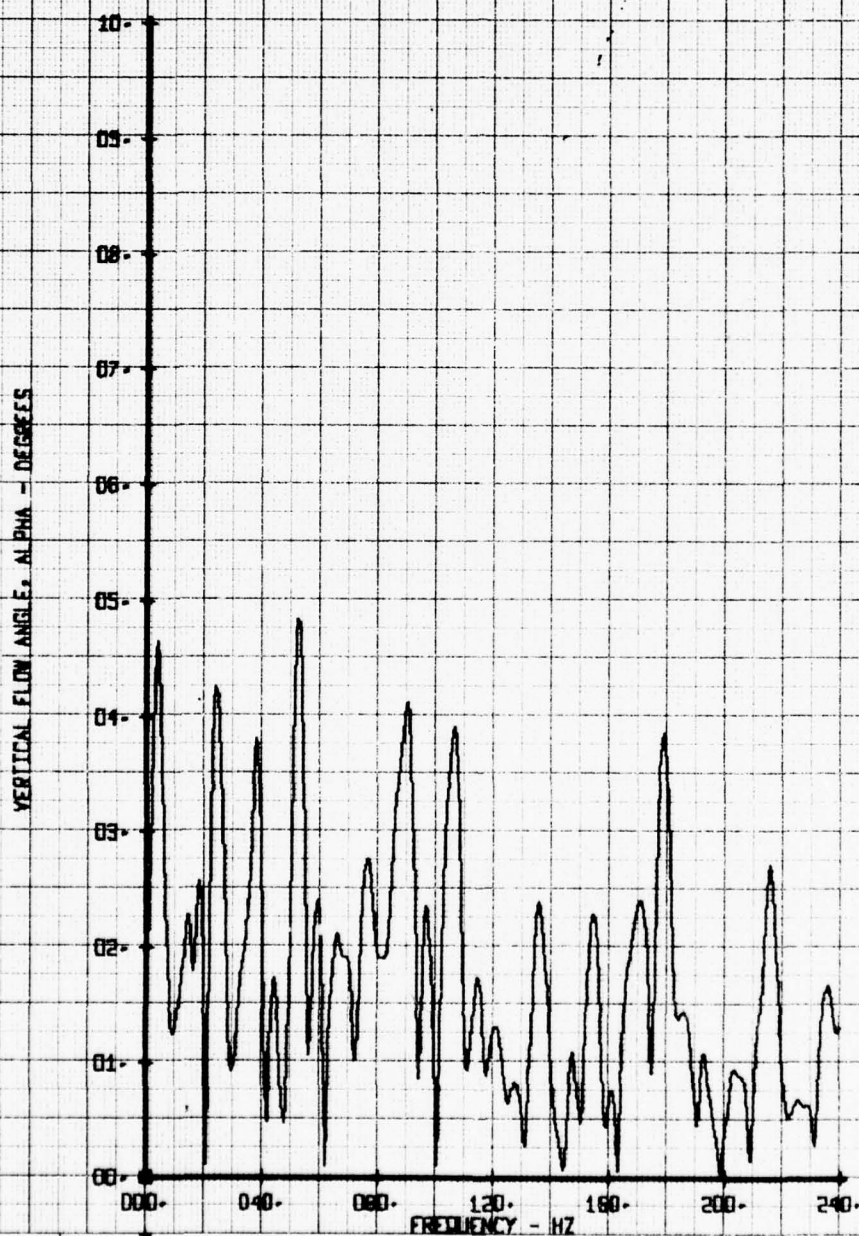
HOT FILM WAKE FREQUENCY ANALYSIS
 BASE RUN - EFF OF WINGS HUB COVERS
 RUN 181 TP 13

LEGEND
 CH 65
 PARAMETER
 V-BETA



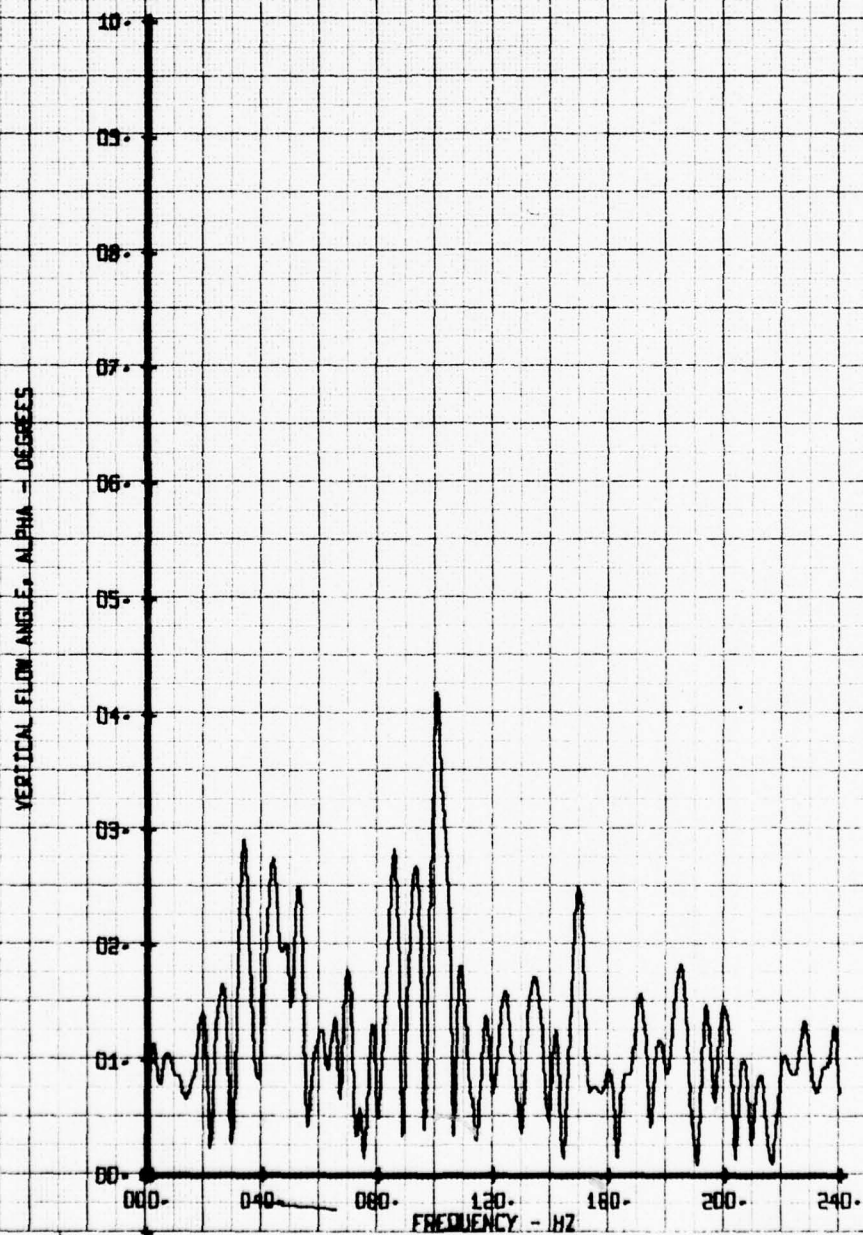
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. NUM CYRS GLASS FRISBEE 180
RUN 183 TP 4

LEGEND
CH PARAMETER
65 ALPHA



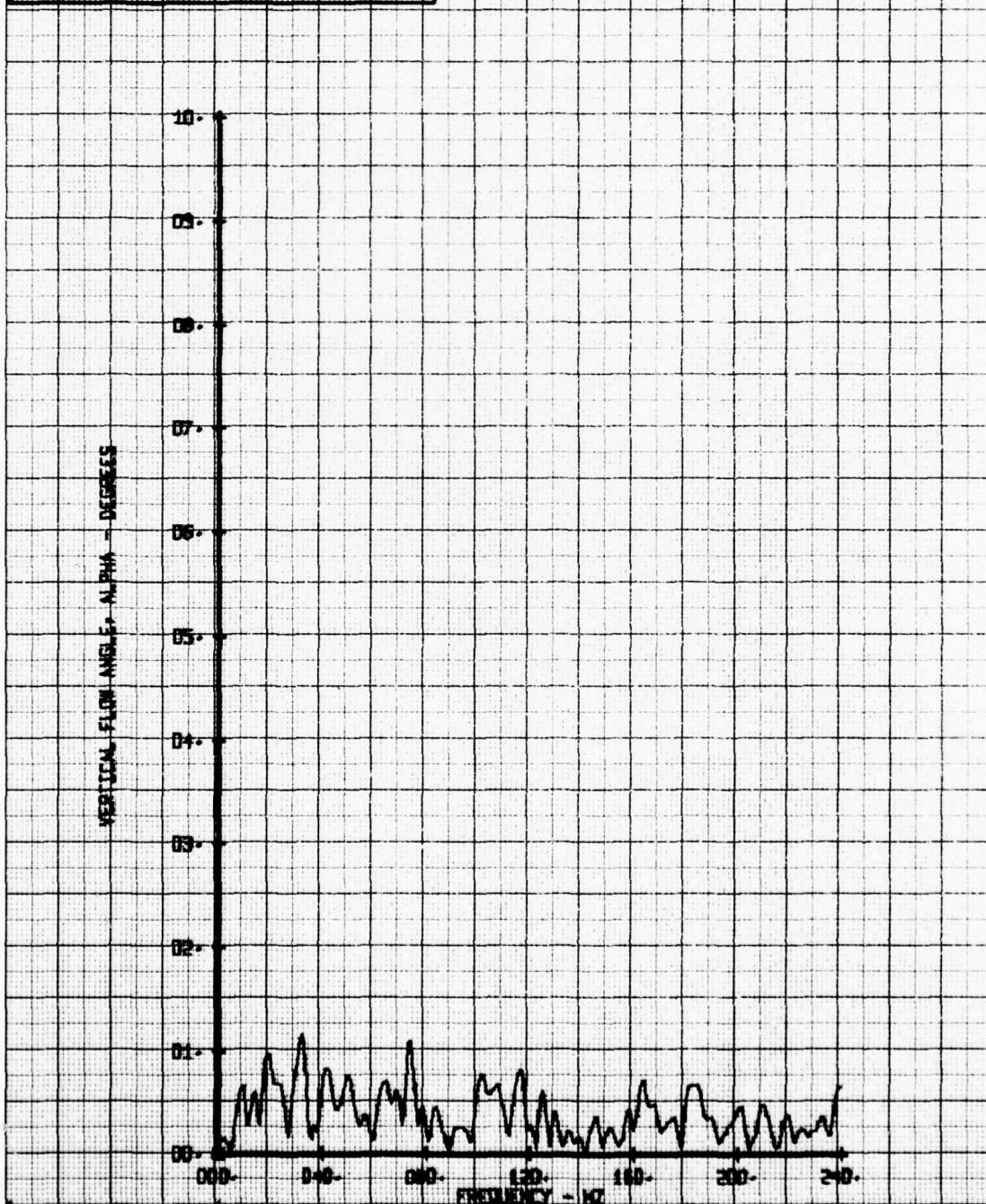
HOT FILM WIRE FREQUENCY ANALYSIS
MISC- HUB CYRS GLASS FIBER 160
RUN 183 TP 5

LEGEND
CM PARAMETER
66 ALPHA



NOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS GLASS FRISBEE 150
PLN 103 TP 6

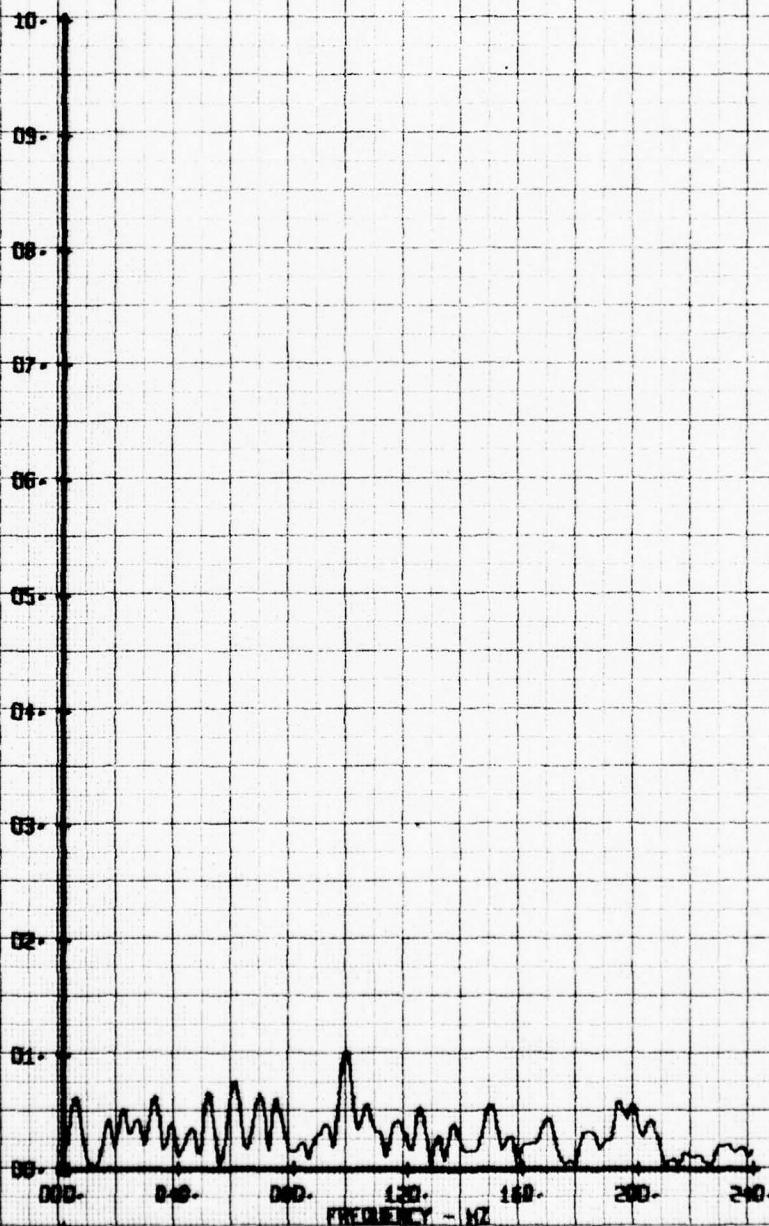
LEGEND
CN PARAMETER
66 ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
MISC. MUP CYRS GLASS FRISBEE 150
RUN 183 TP 7

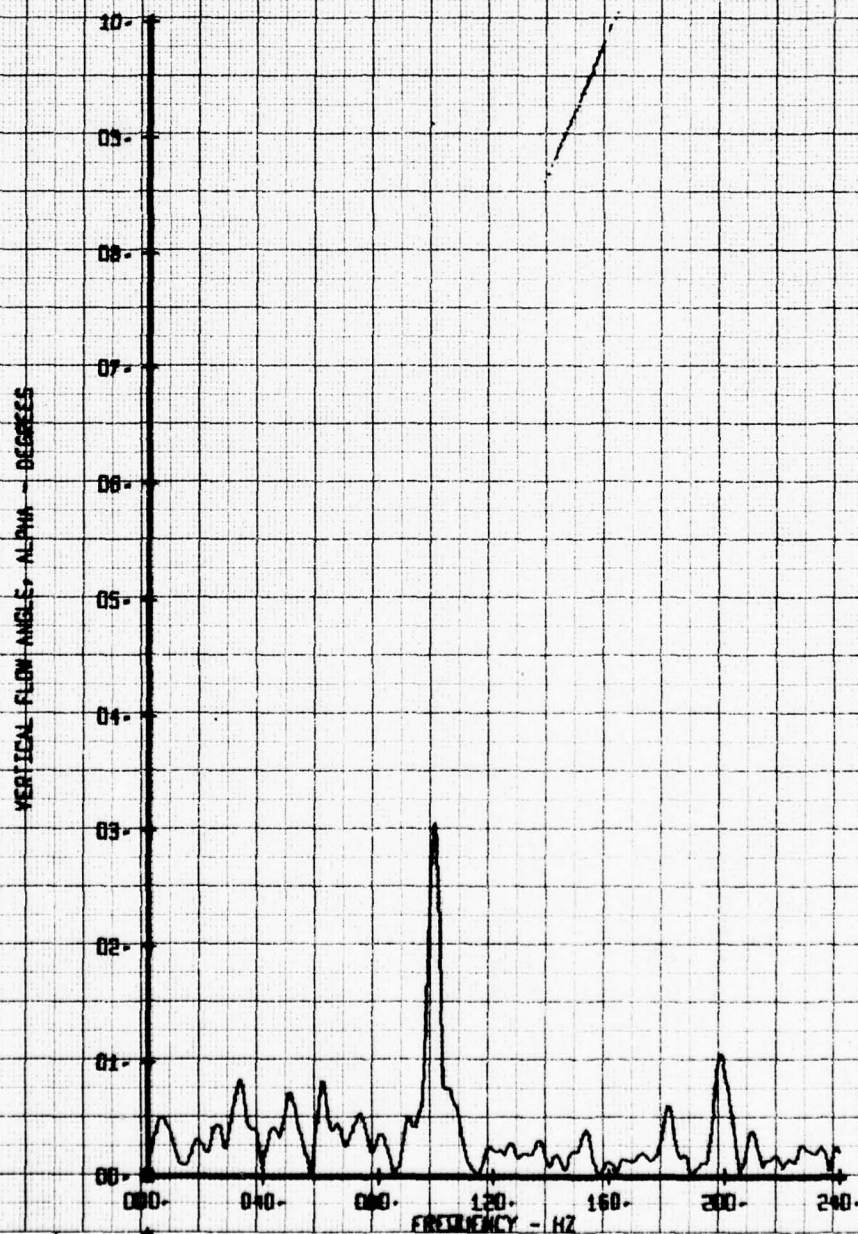
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE - ALPHA - DEGREES



NOT FILM WARE FREQUENCY ANALYSIS
MCC- MUB CYRS GLASS FRIGER 150
RUN 109 TP 0

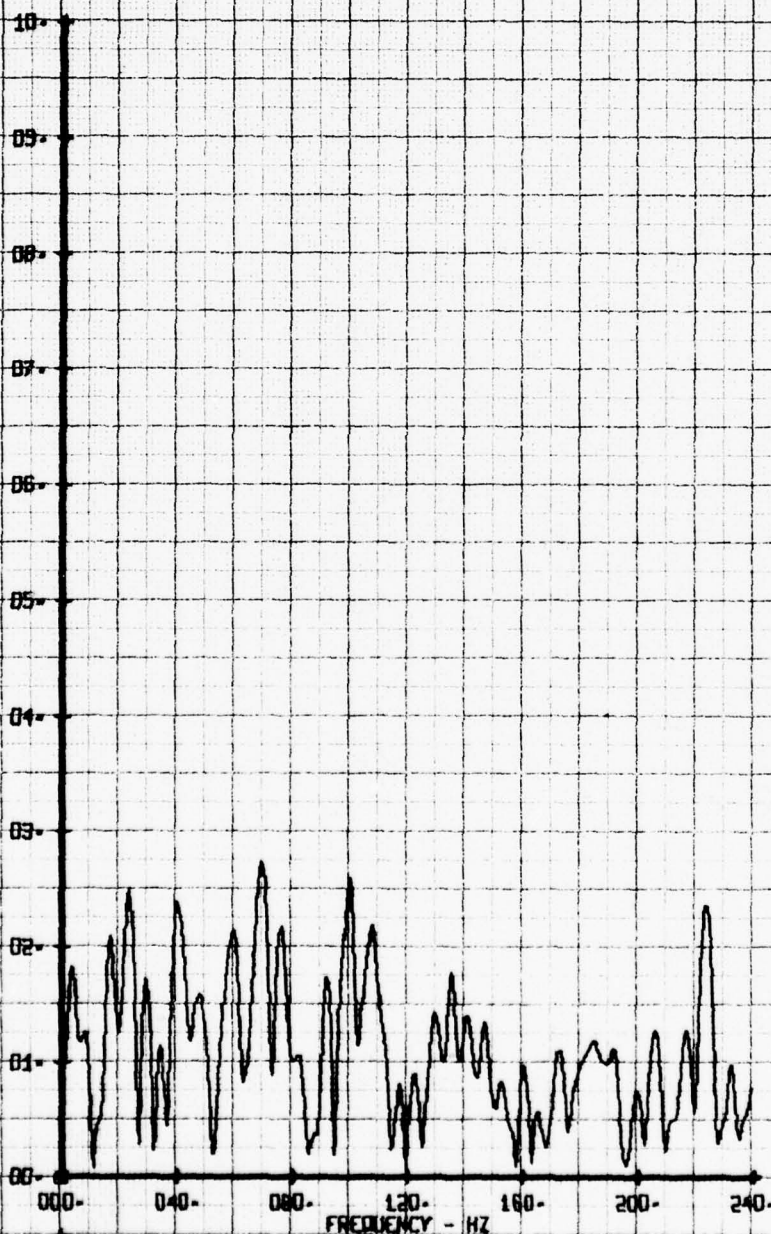
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS GLASS FRISBEE 160
RUN 183 TP 4

LEGEND
CH 65
PARAMETER
BETA

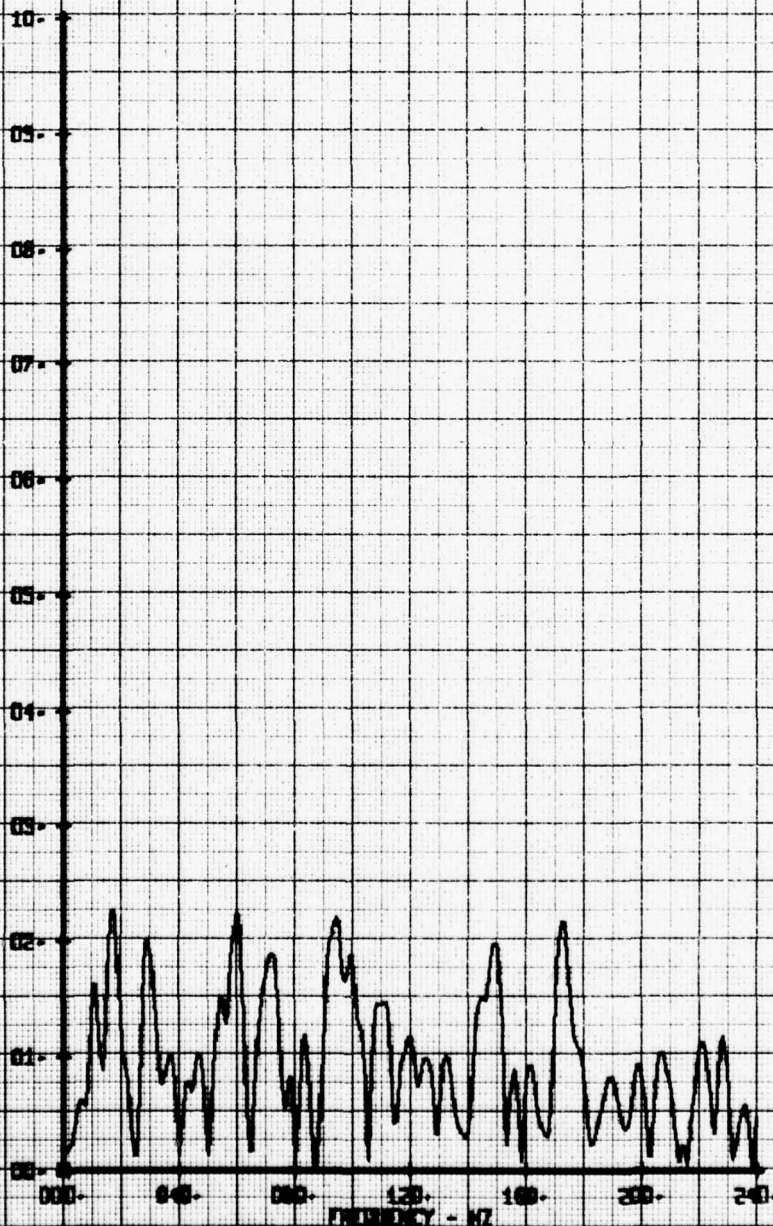
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. MUP CYRS GLASS FRISBEE 180
RUN 183 TP 5

LEGEND
CH: PARAMETER
65 BETA

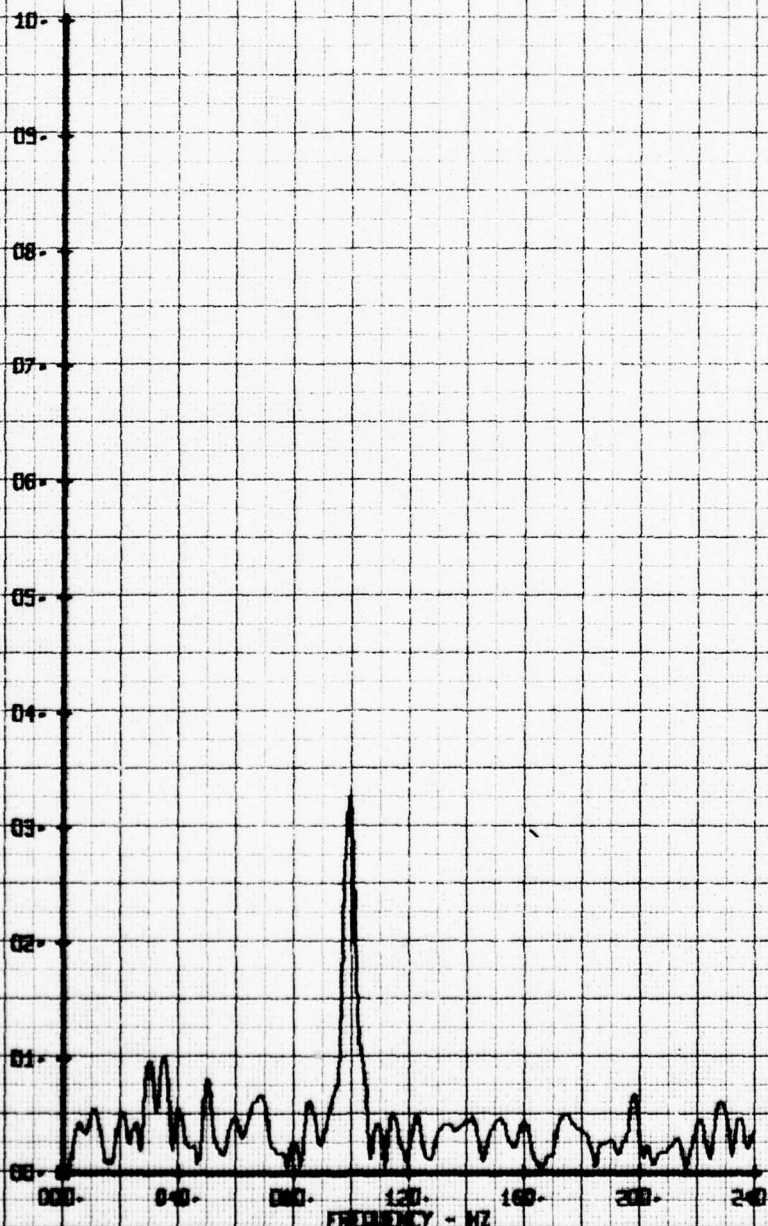
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS GLASS FRISBEE 160
RUN 189 TP 5

LEGEND
CH- PARAMETER
65 BETA

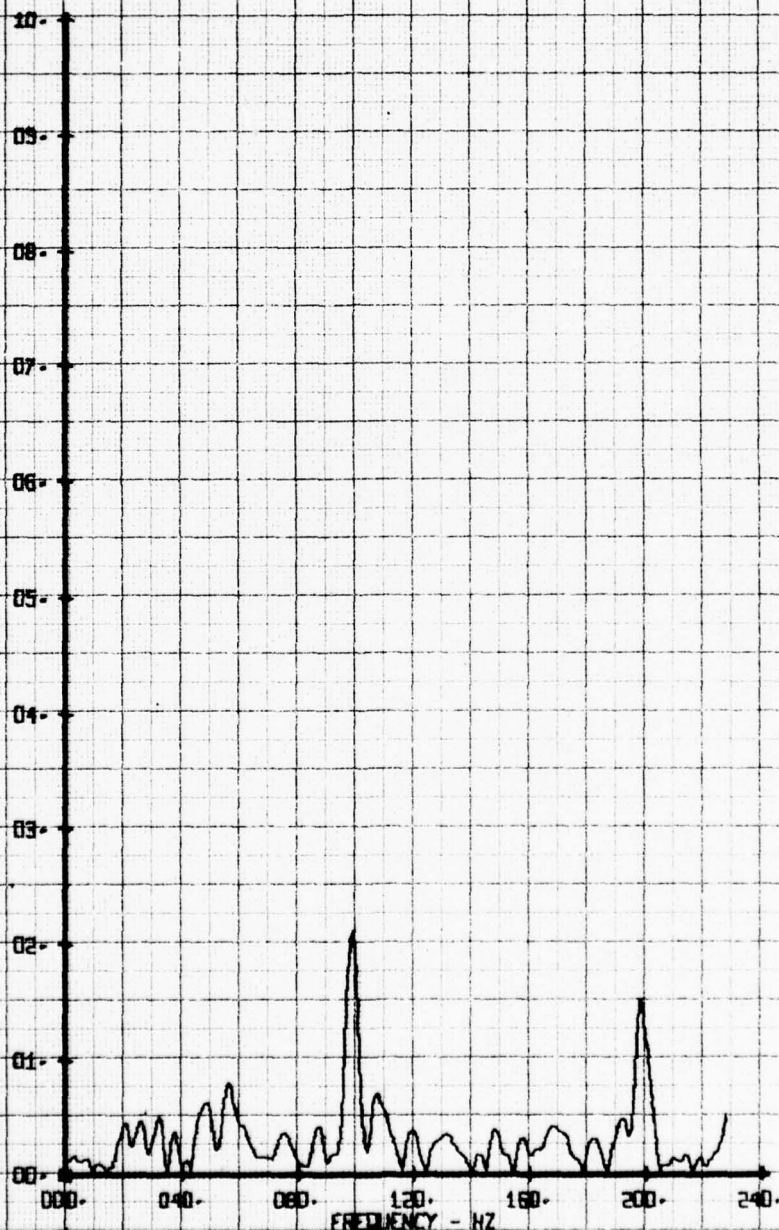
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
MUSE - MUM CYRS GLASS FRIGNEE 160
RUN 183 TP 7

LEGEND
CH PARAMETER
65 BETA

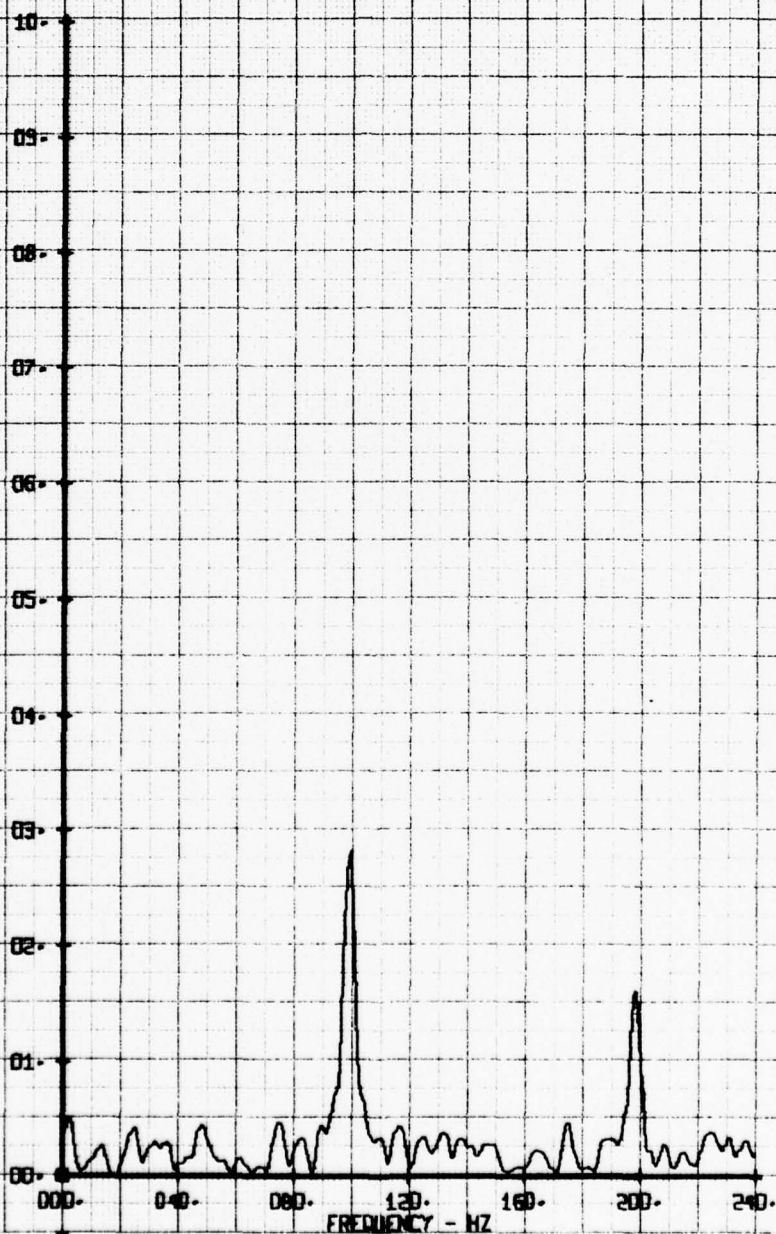
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WIRE FREQUENCY ANALYSIS
MISC. NEW CYRS BLASS FRISBEE 180
RUN 183 TP 8

LEGEND
CH PARAMETER
65 BETA

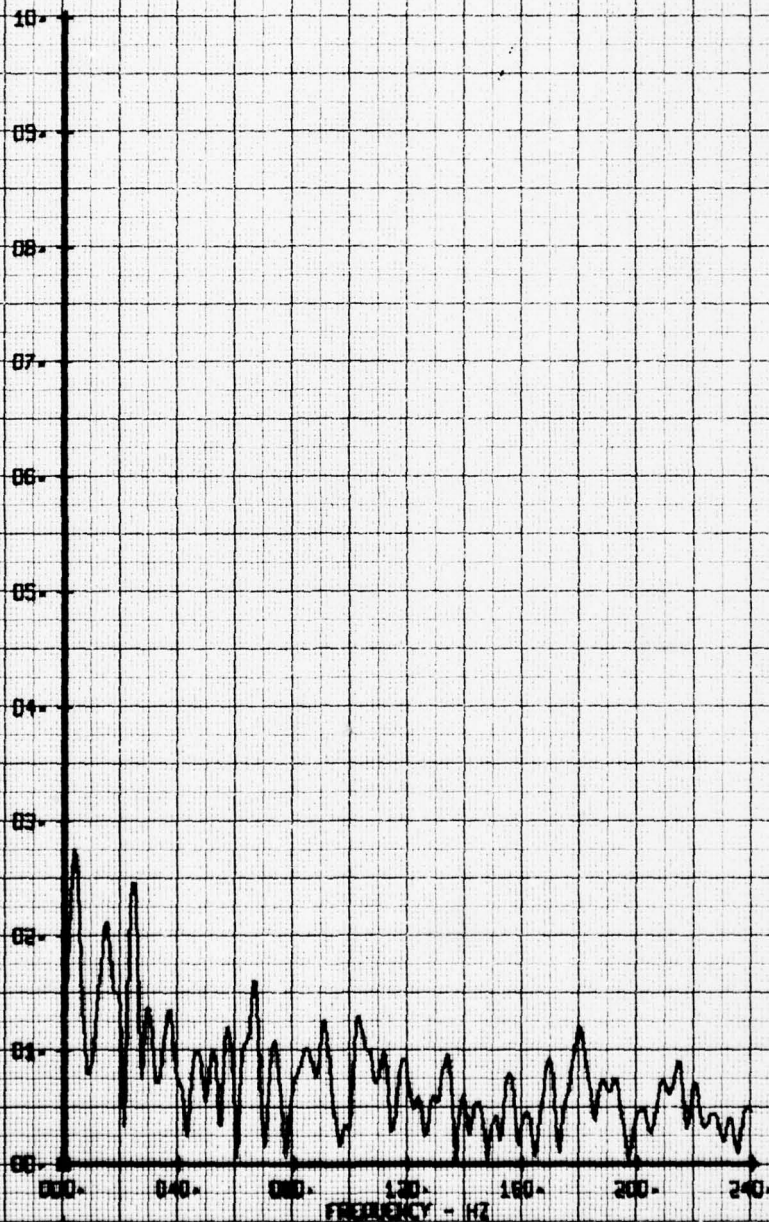
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS GLASS FRISBEE 150
RUN 183 TP 4

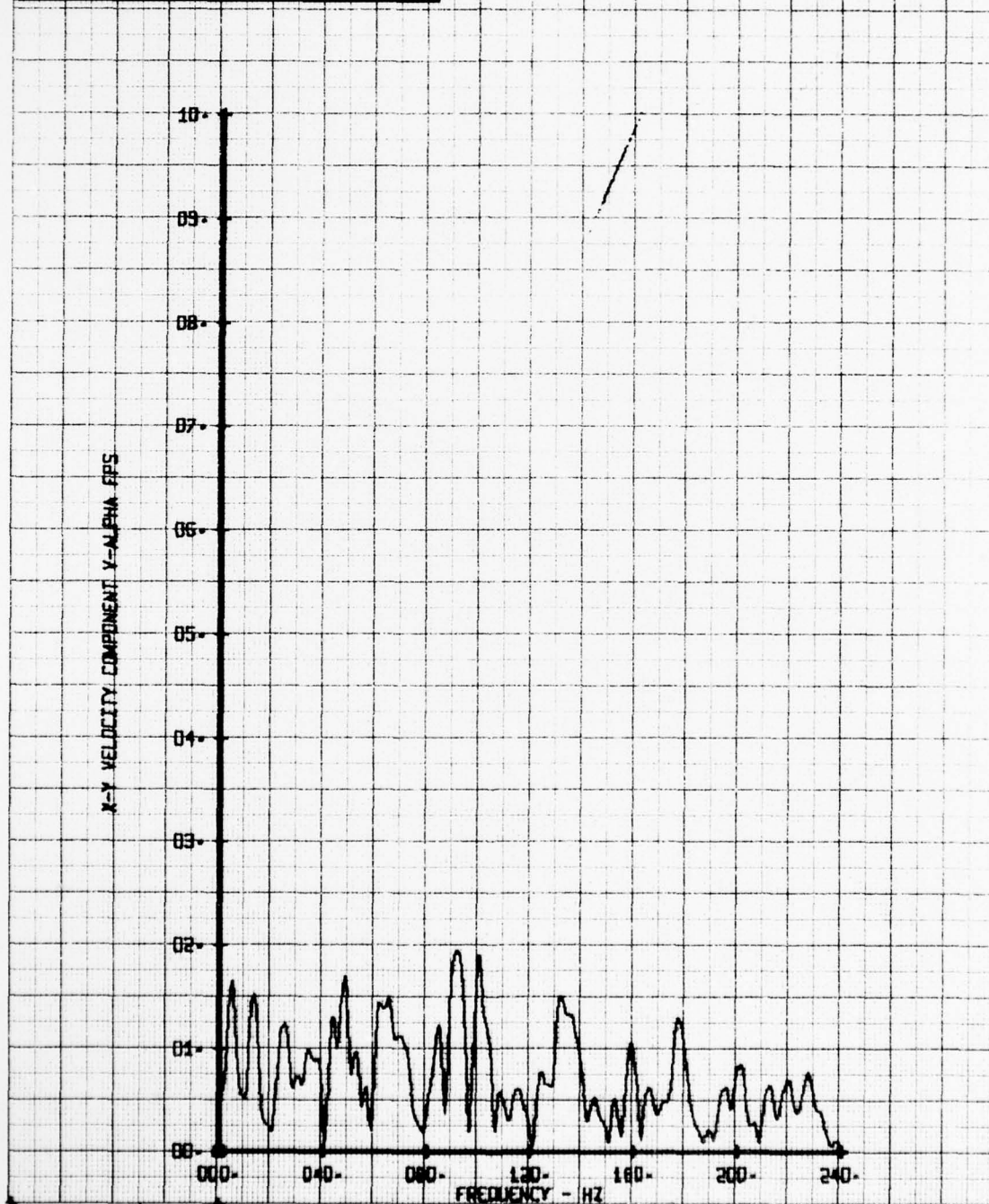
LEGEND
CH PARAMETER
66 V-ALPHA

V-V VELOCITY COMPONENT V-ALPHA FPS



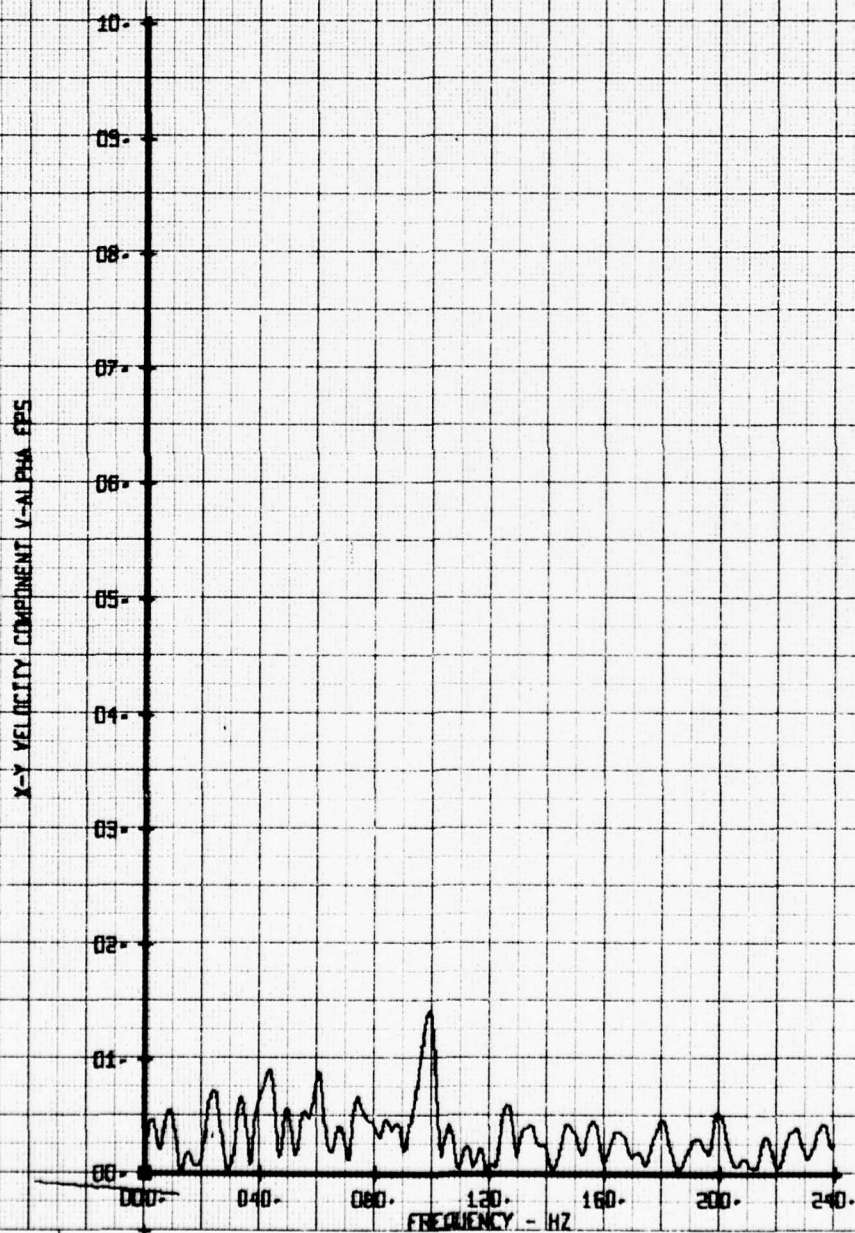
HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS GLASS FRISBEE 160
RUN 183 TP 5

LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CYRS GLASS FRISBEE 160
RUN 183 TP 5

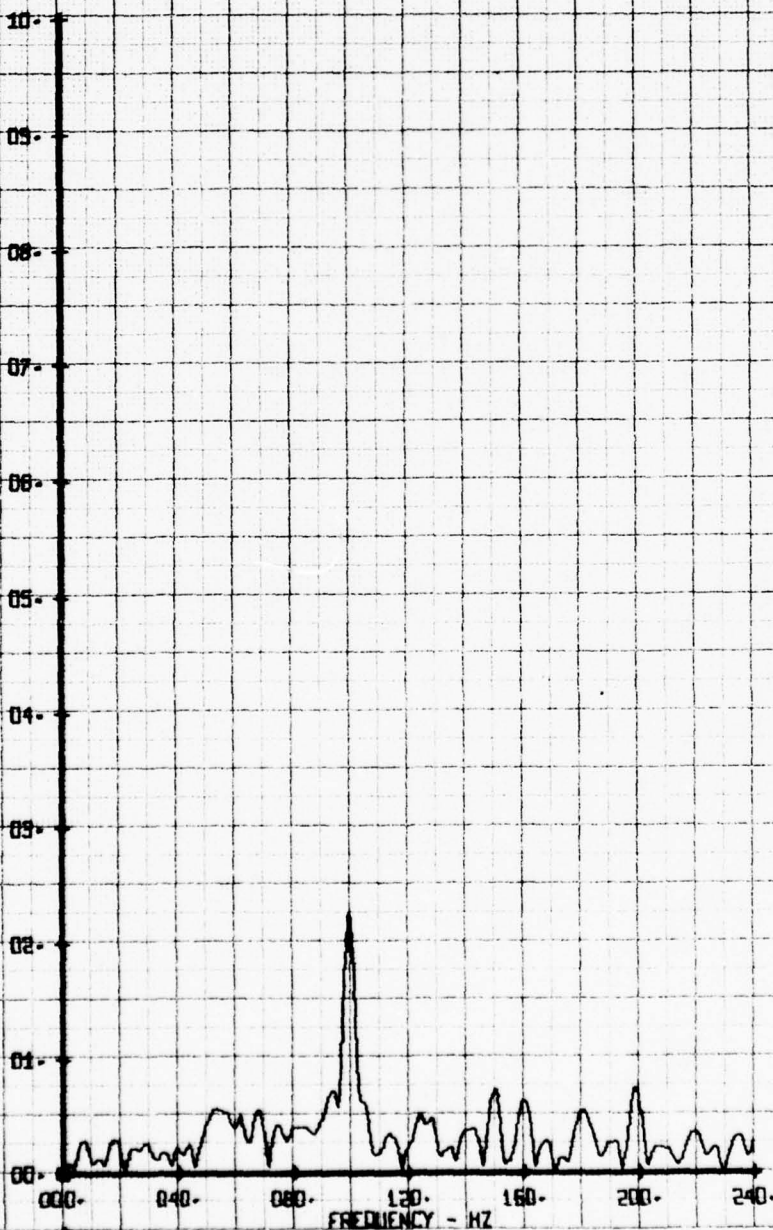
LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC - MUR CYRE BLASS FRIENEE 100
RUN 183 TP 7

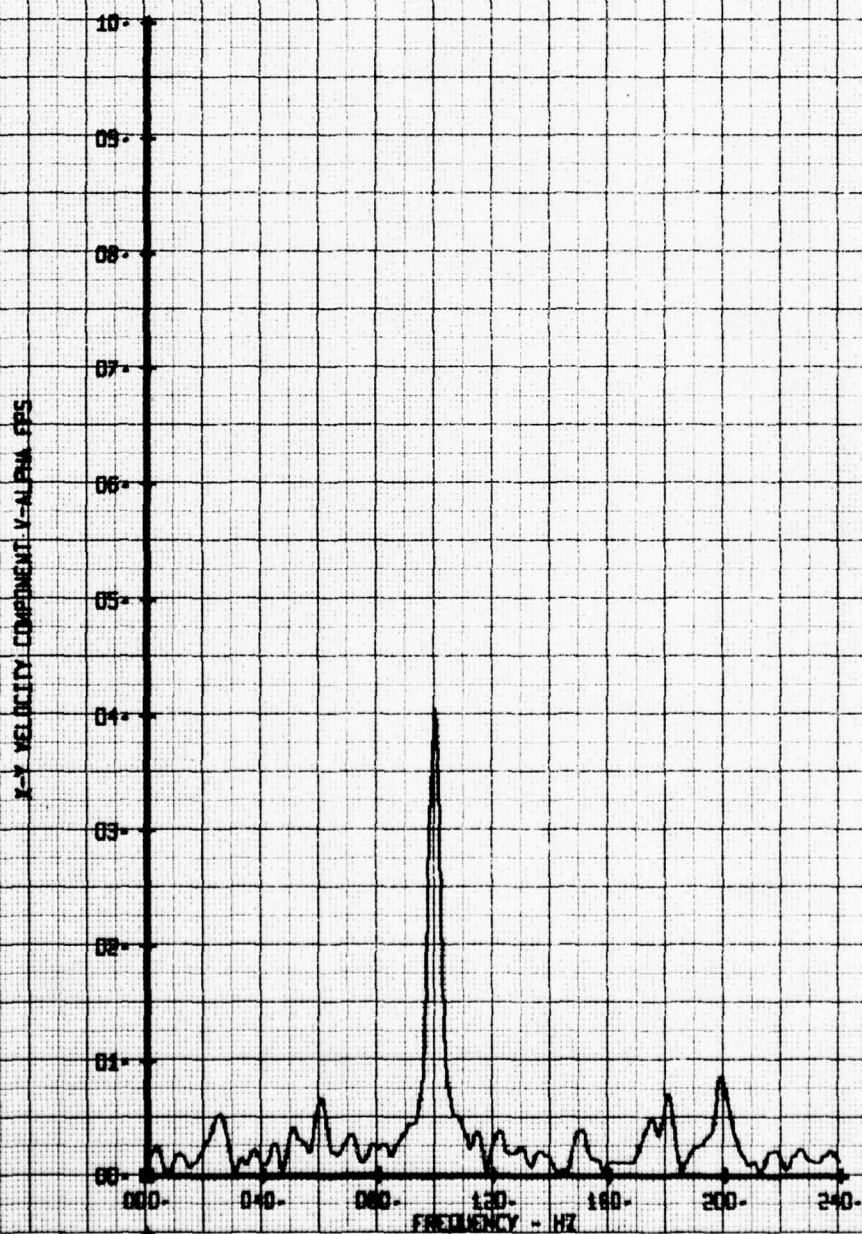
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WIRE FREQUENCY ANALYSIS
MISC - HUB CVRS BLASS FRISBEE 160
RUN 183 TP 9

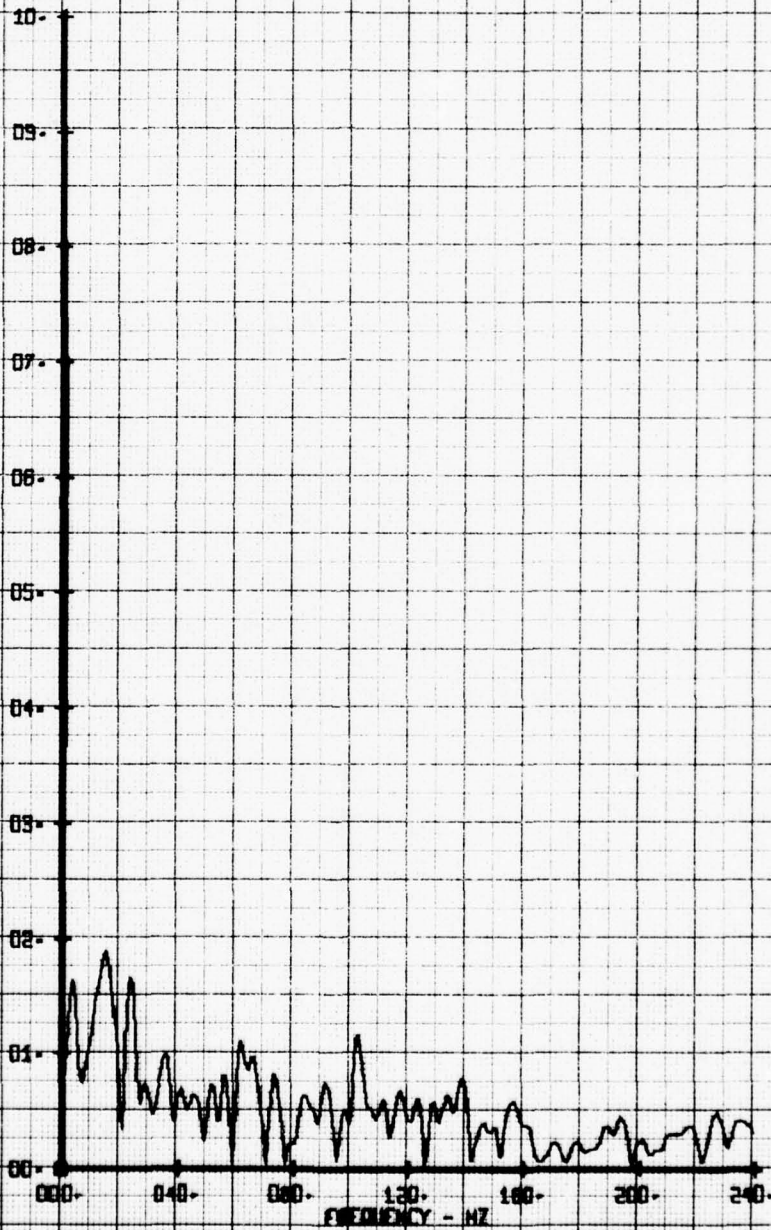
LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CVRS GLASS FRISKEE 160
RUN 183 TP 4

LEGEND
CH PARAMETER
65 Y-BETA

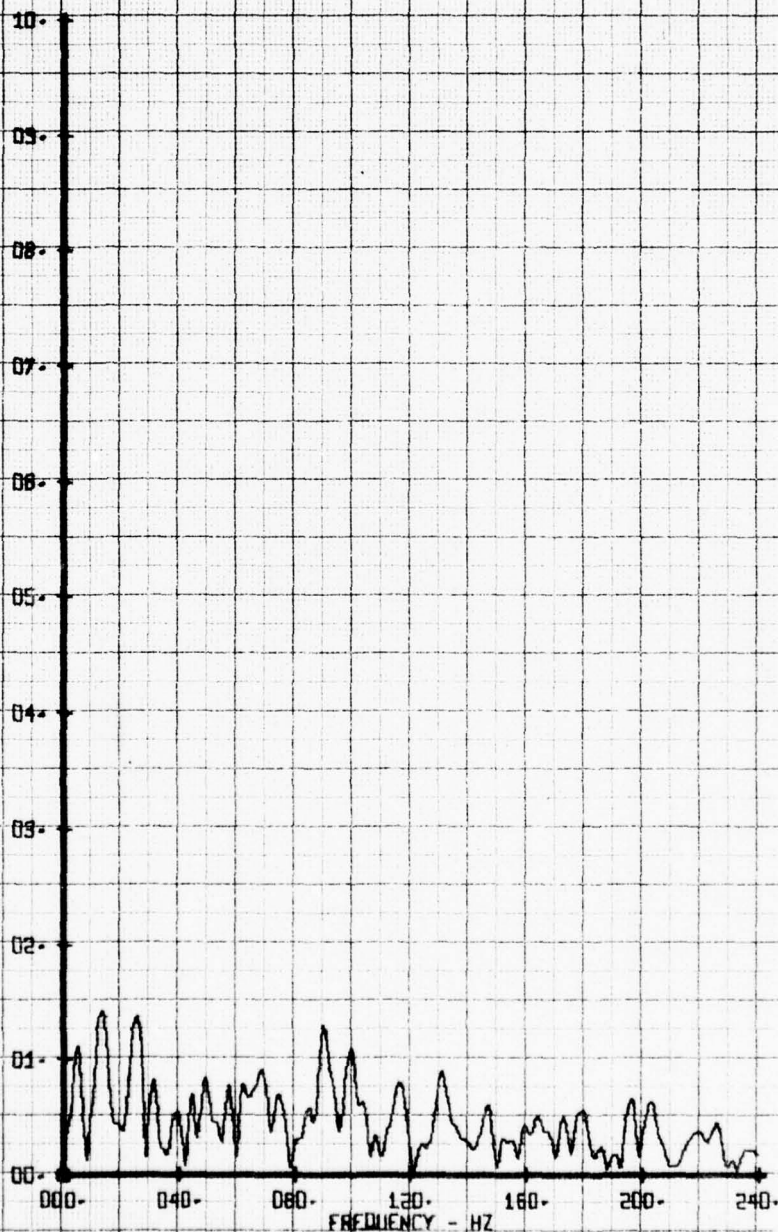
X-7 VELOCITY COMPONENT Y-BETA FPS



HOT FILM WIRE FREQUENCY ANALYSIS
MISC- HUB CYRS BLASS FRISSKE 160
RUN 183 TP 5

LEGEND
CM PARAMETER
65 V-BETA

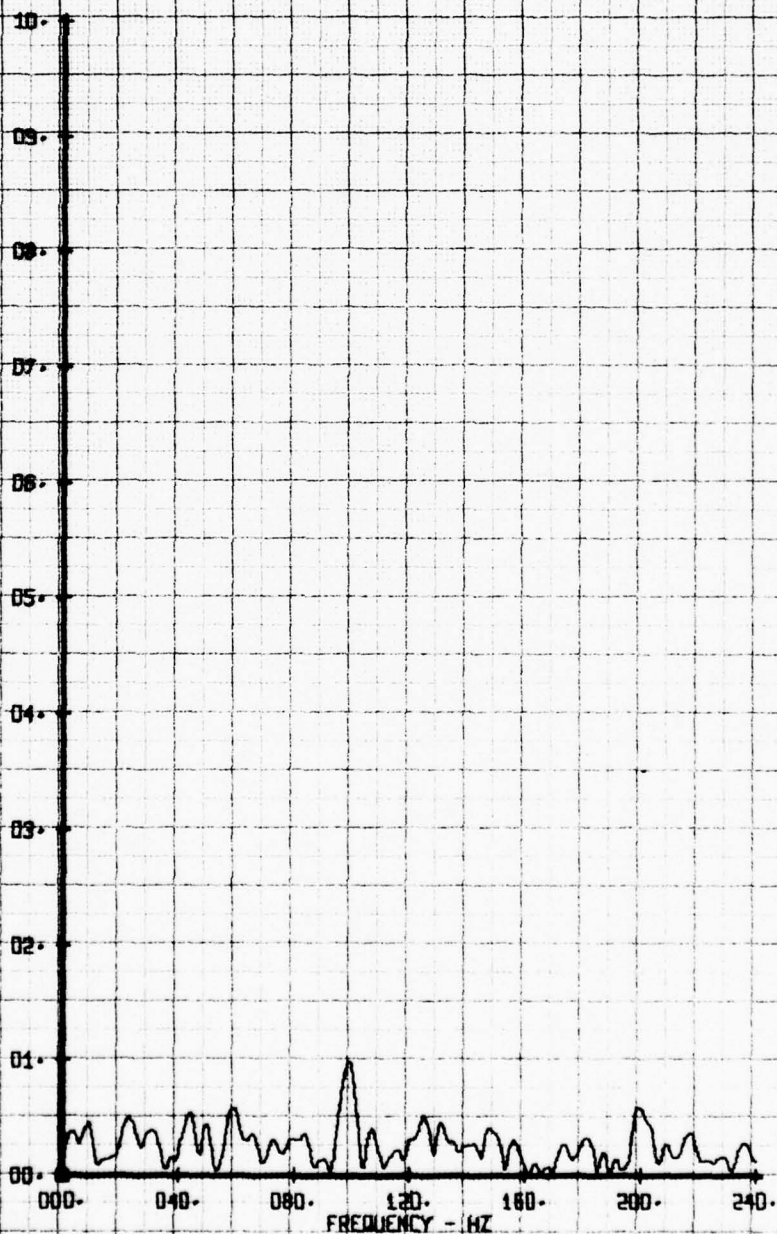
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WIRE FREQUENCY ANALYSIS
MISC. HUB CYRS BLASS FRISCH 150
RUN 183 TP 6

LEGEND
CH PARAMETER
65 V-BETA

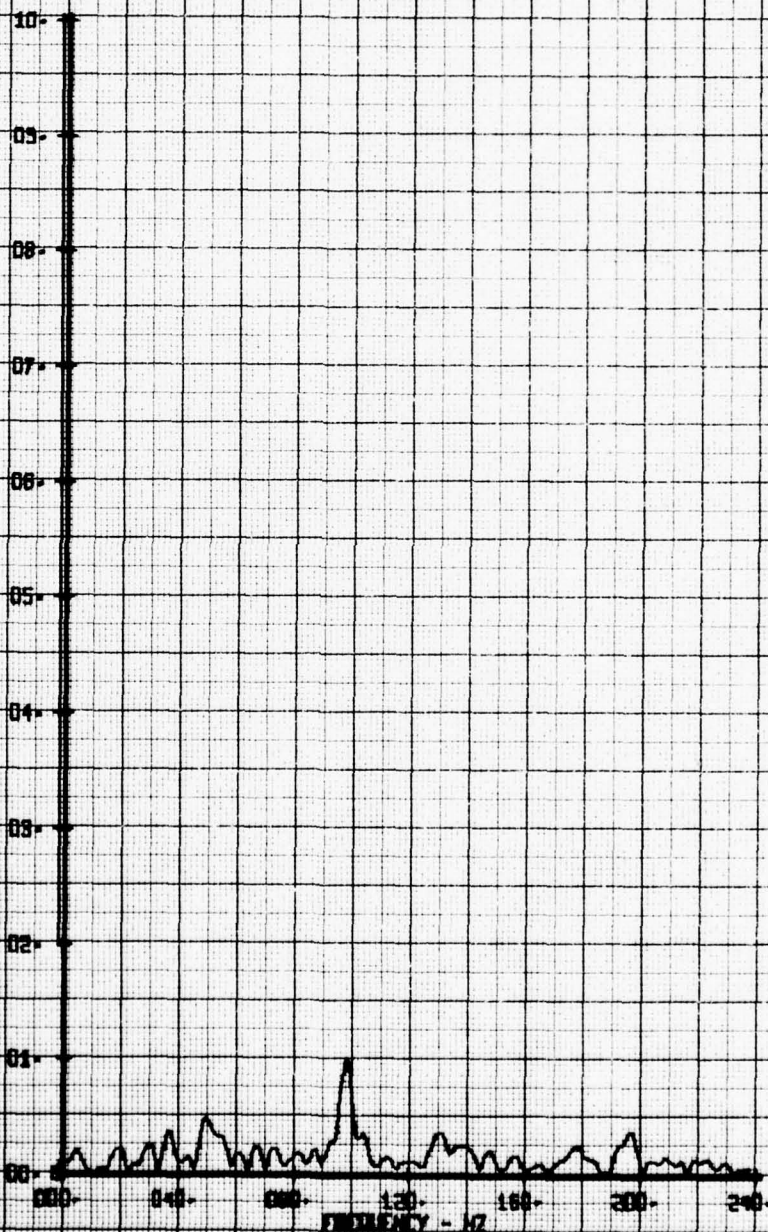
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. HUB CURS GLASS FRISBEE 160
RUN 188 TP 7

LEGEND
CM PARAMETER
P5 V-BETA

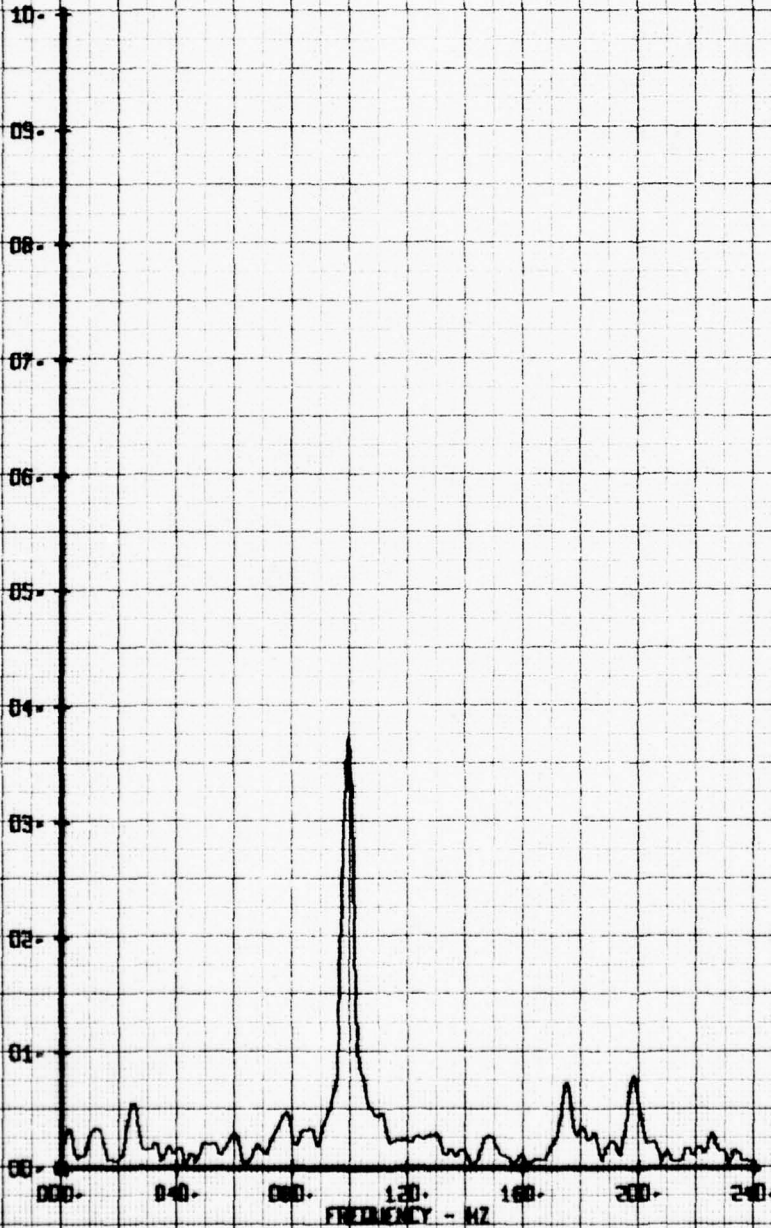
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
MISC. MUB CVRS GLASS FRISBEE 160
RUN 183 TP 8

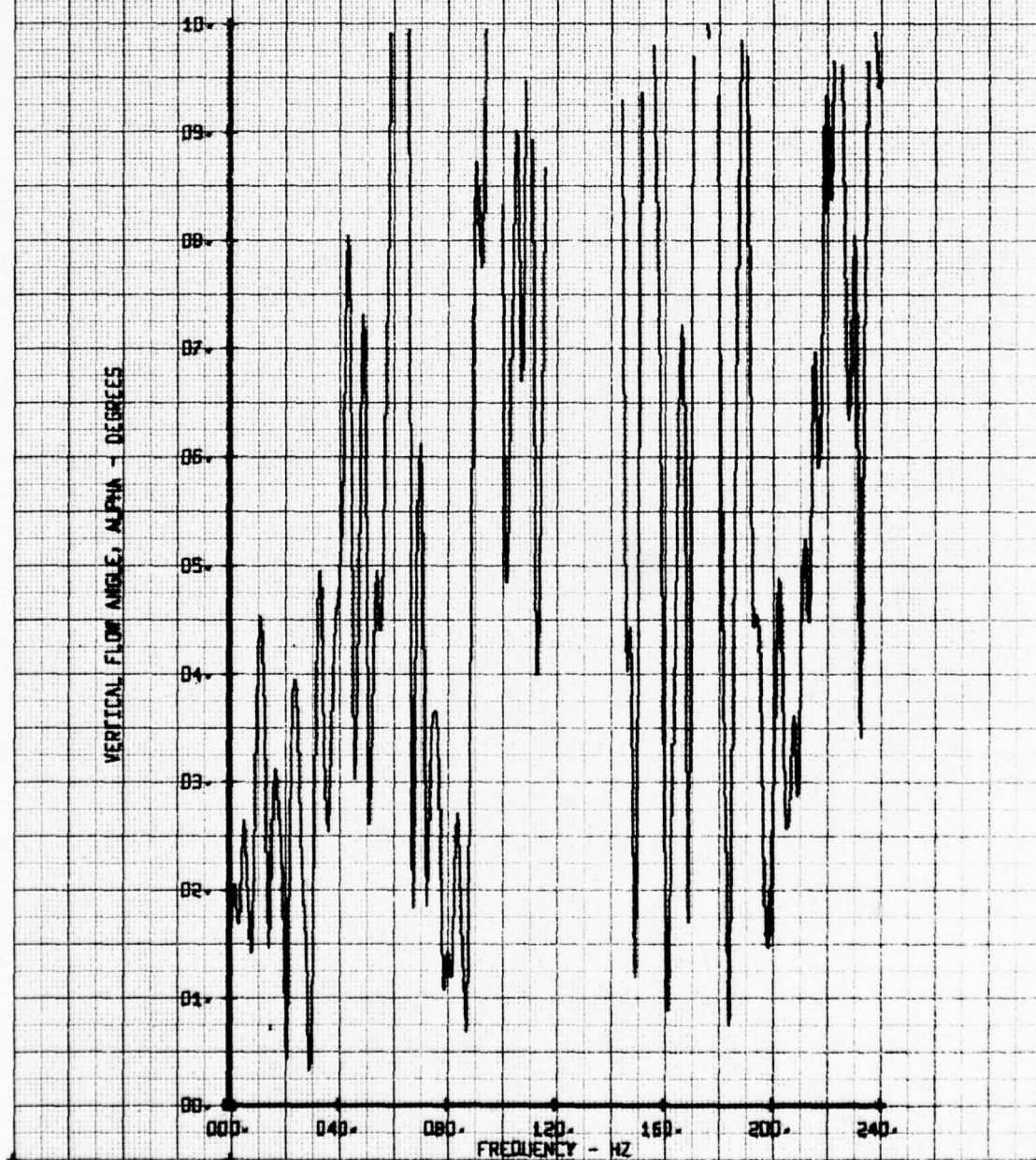
LEGEND
CH 65
PARAMETER
V-BETA

X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS NO BLD
RUN 172 TP 3

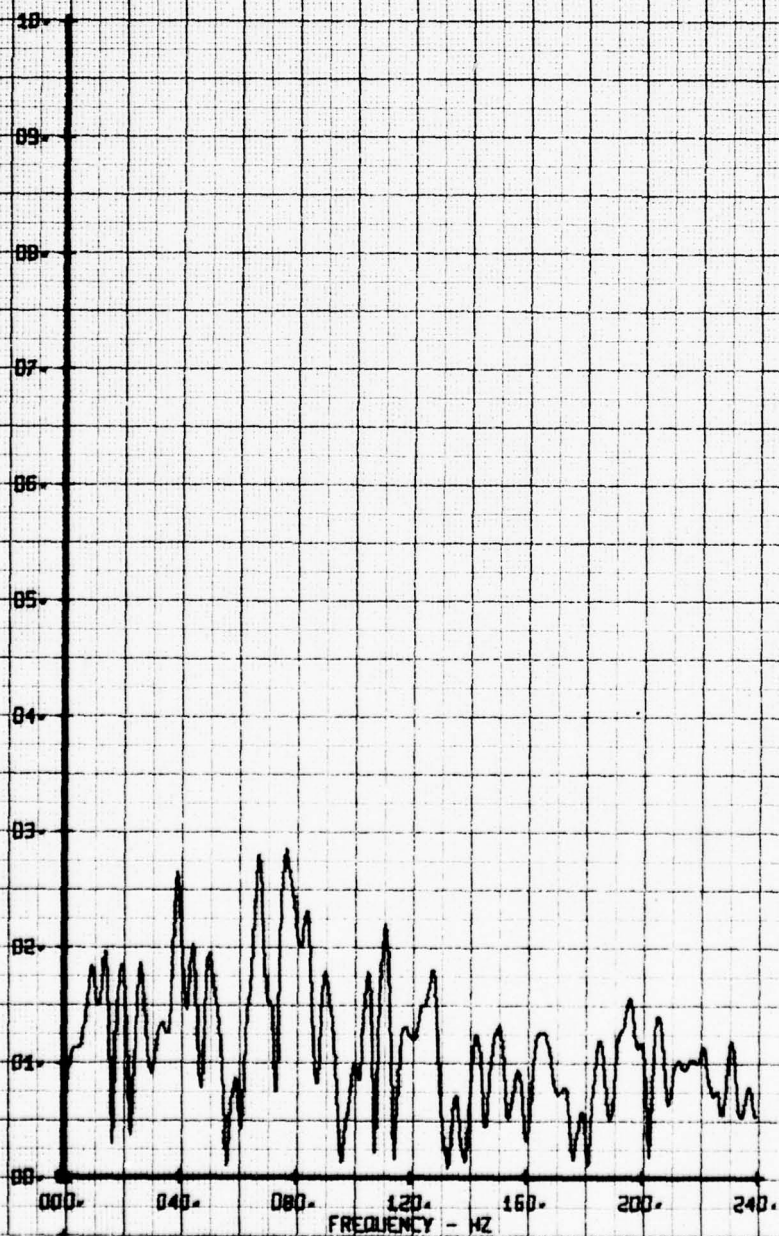
LEGEND
CH 56 PARAMETER
ALPHA



NOT FILM WARE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 010
RUN 172 TP 6

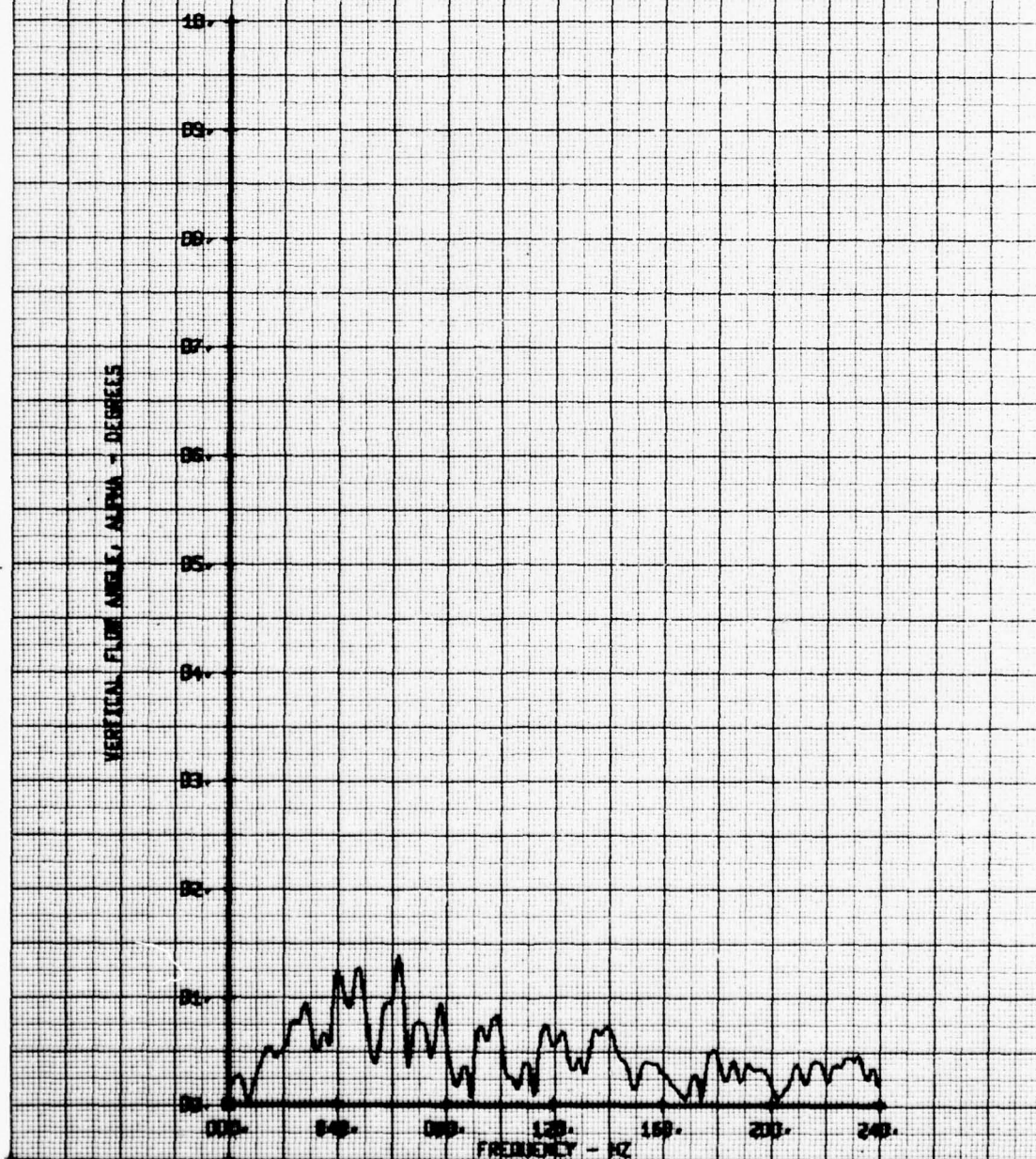
LEGEND
CH PARAMETER
55 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



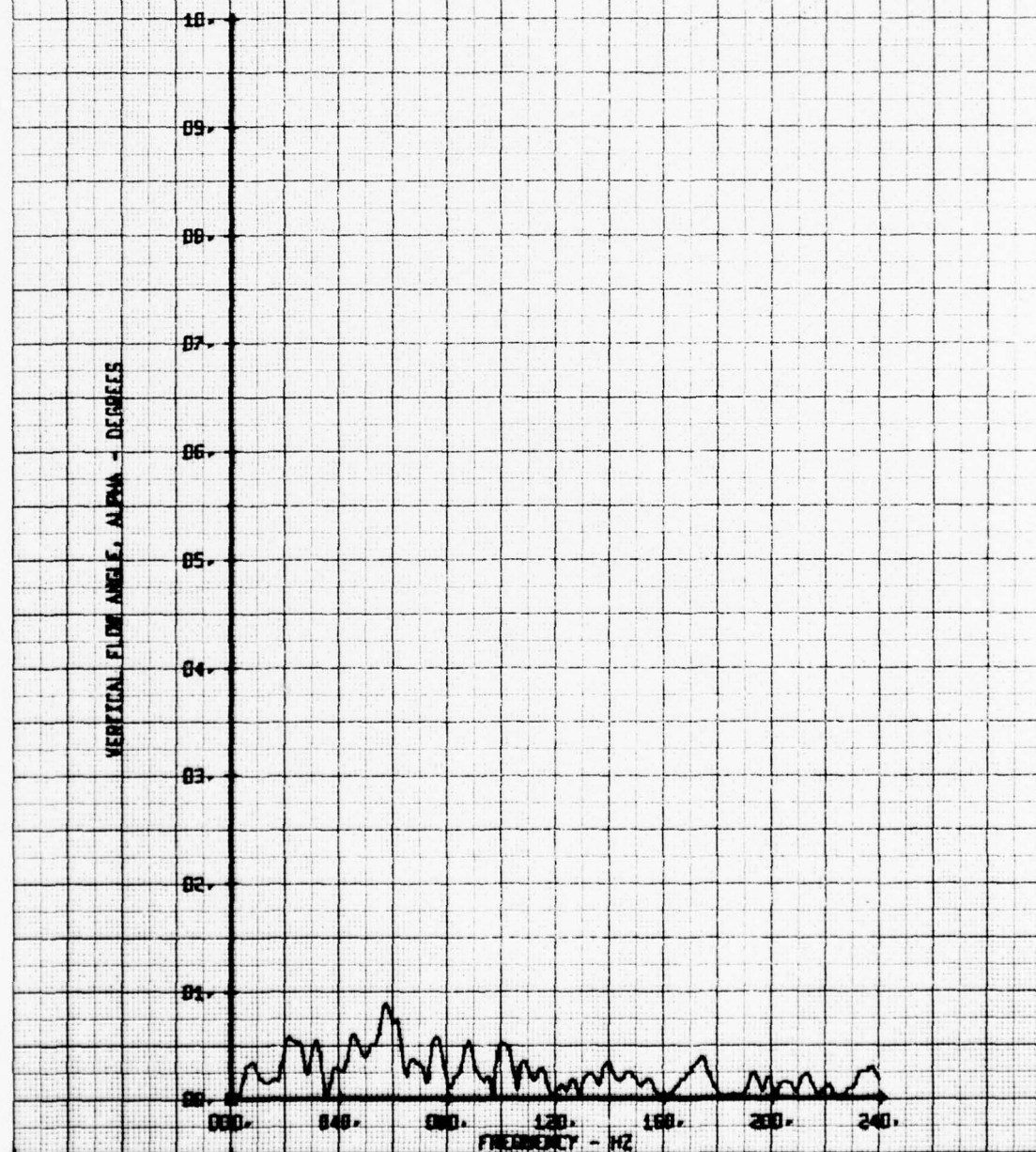
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EXIT NOSE SVS NO 81.0
RUN 172 TP 7

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 810
RUN 172 TP B

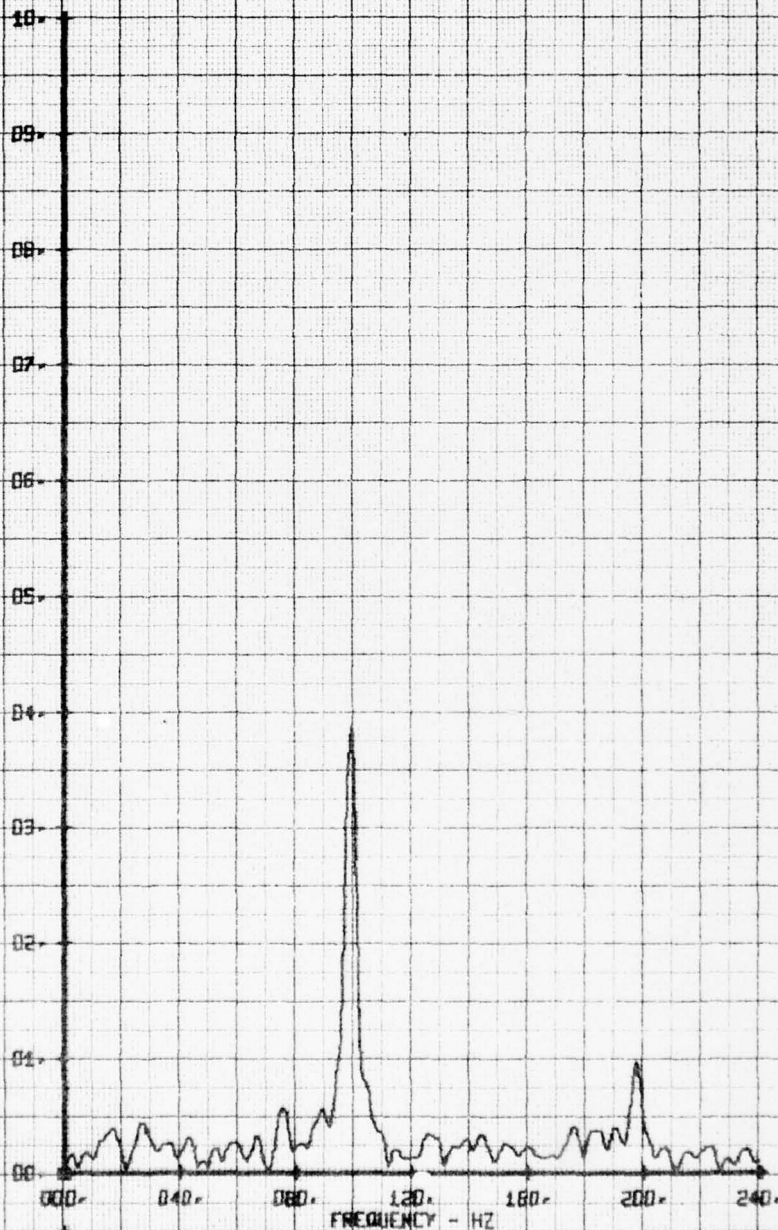
LEGEND
CH 66 PARAMETER
ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 010
RUN 172 TP 9

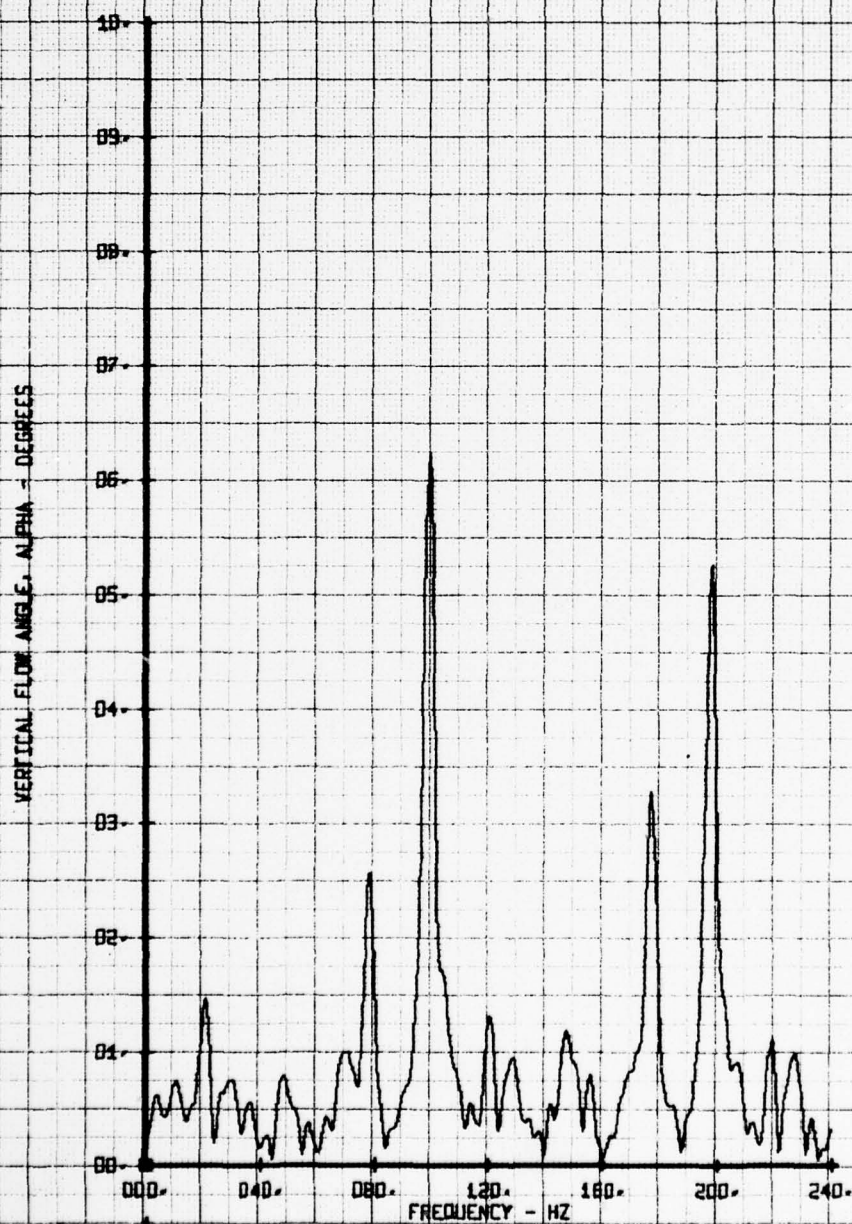
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



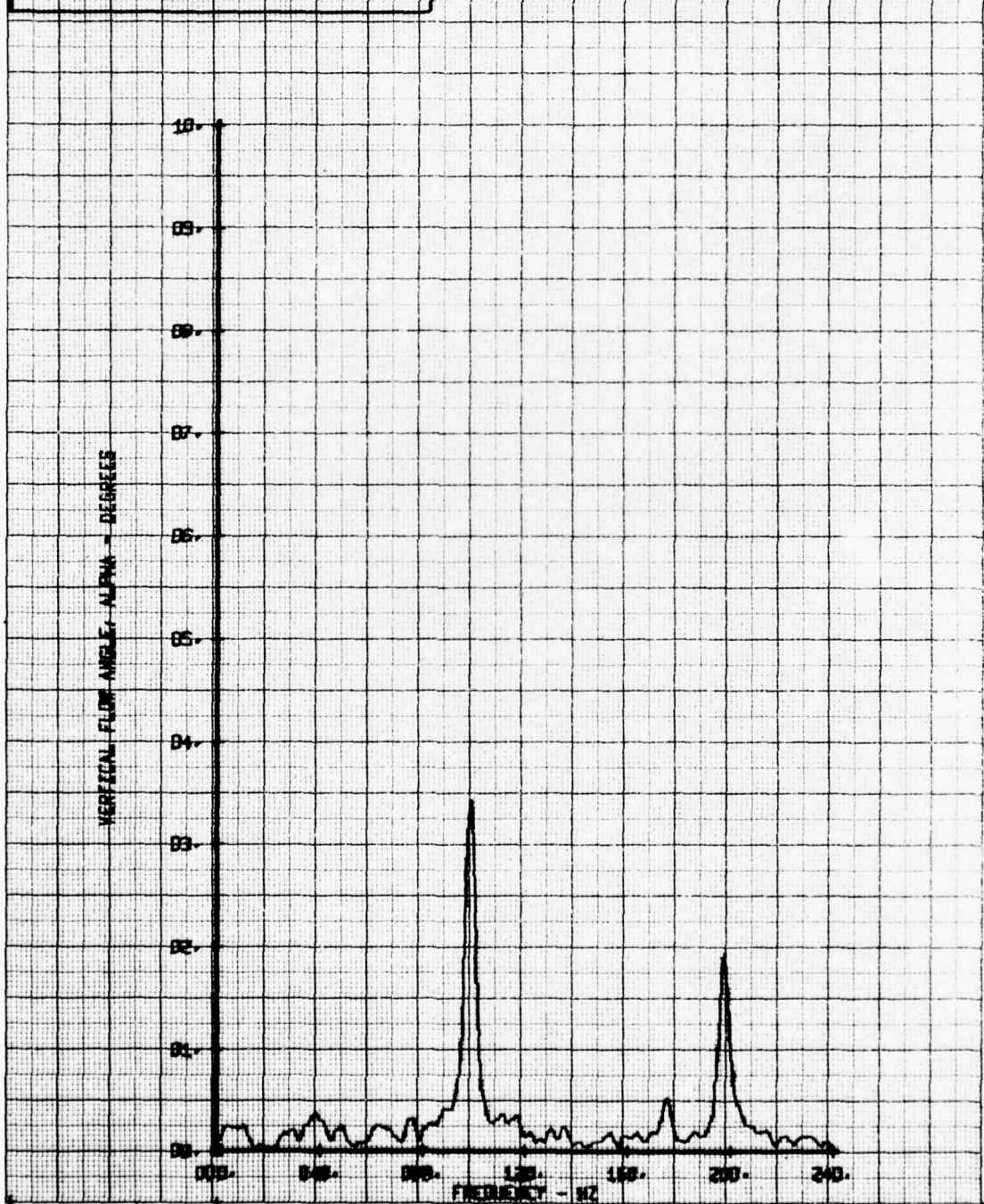
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO. 810
RUN 172 TP 10

LEGEND
CH PARAMETER
66 ALPHA



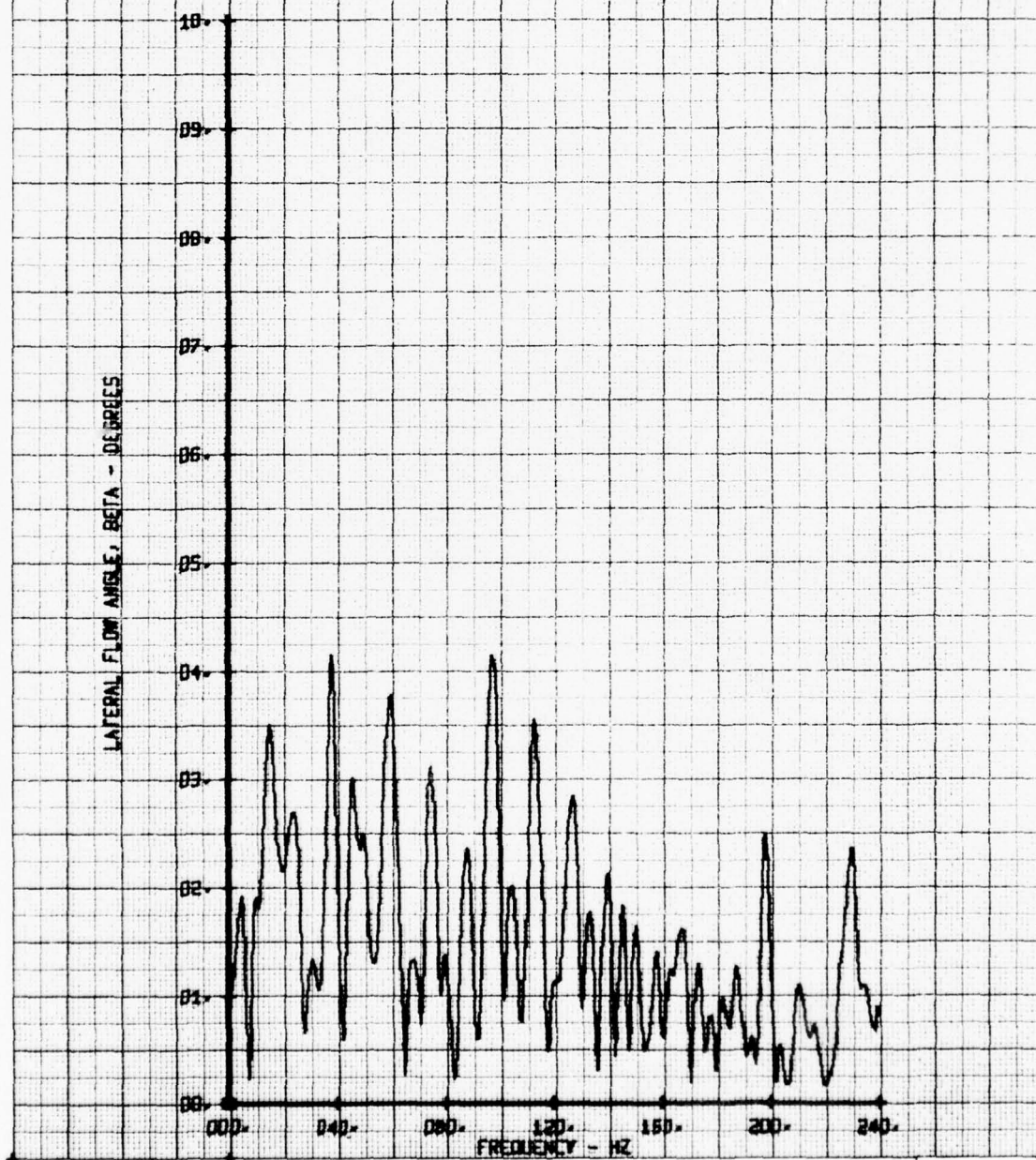
NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO BLD
RUN 172 TP 11

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO. 810
RUN 172 TP 3

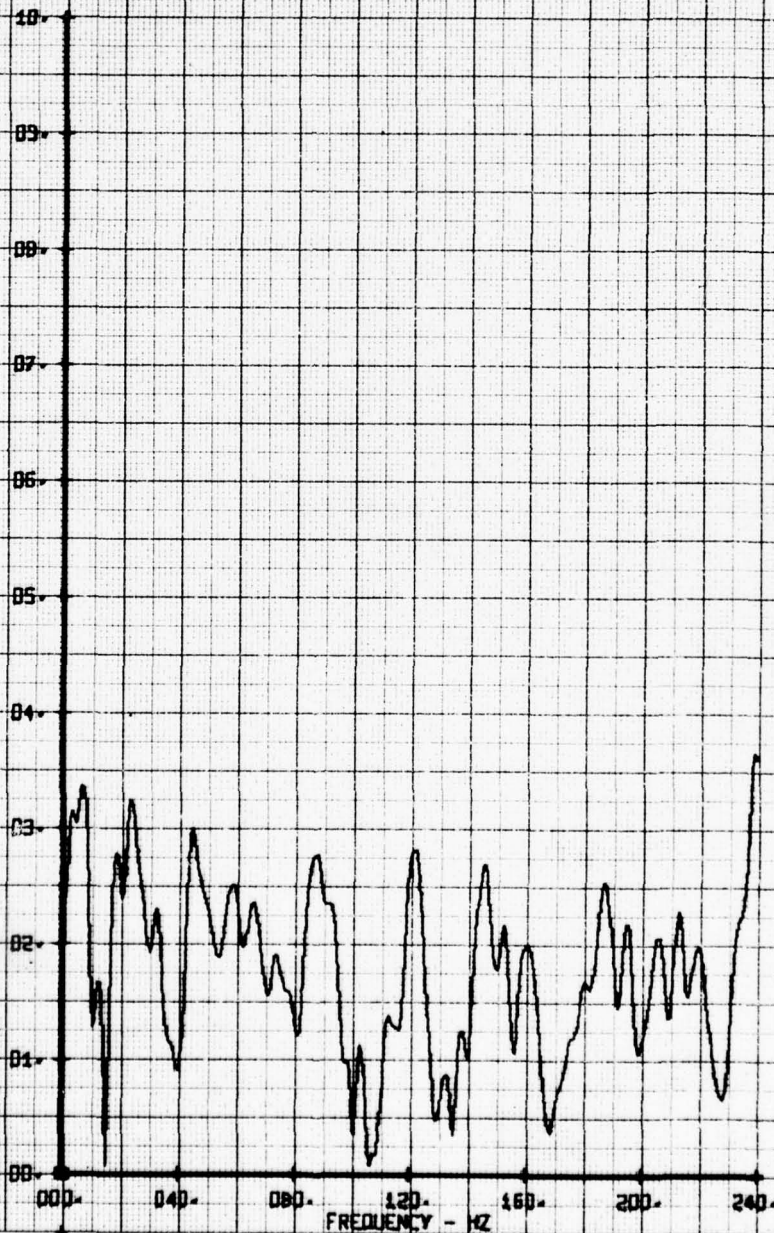
LEGEND
CH 65
PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS NO 810
RUN 172 TP 4

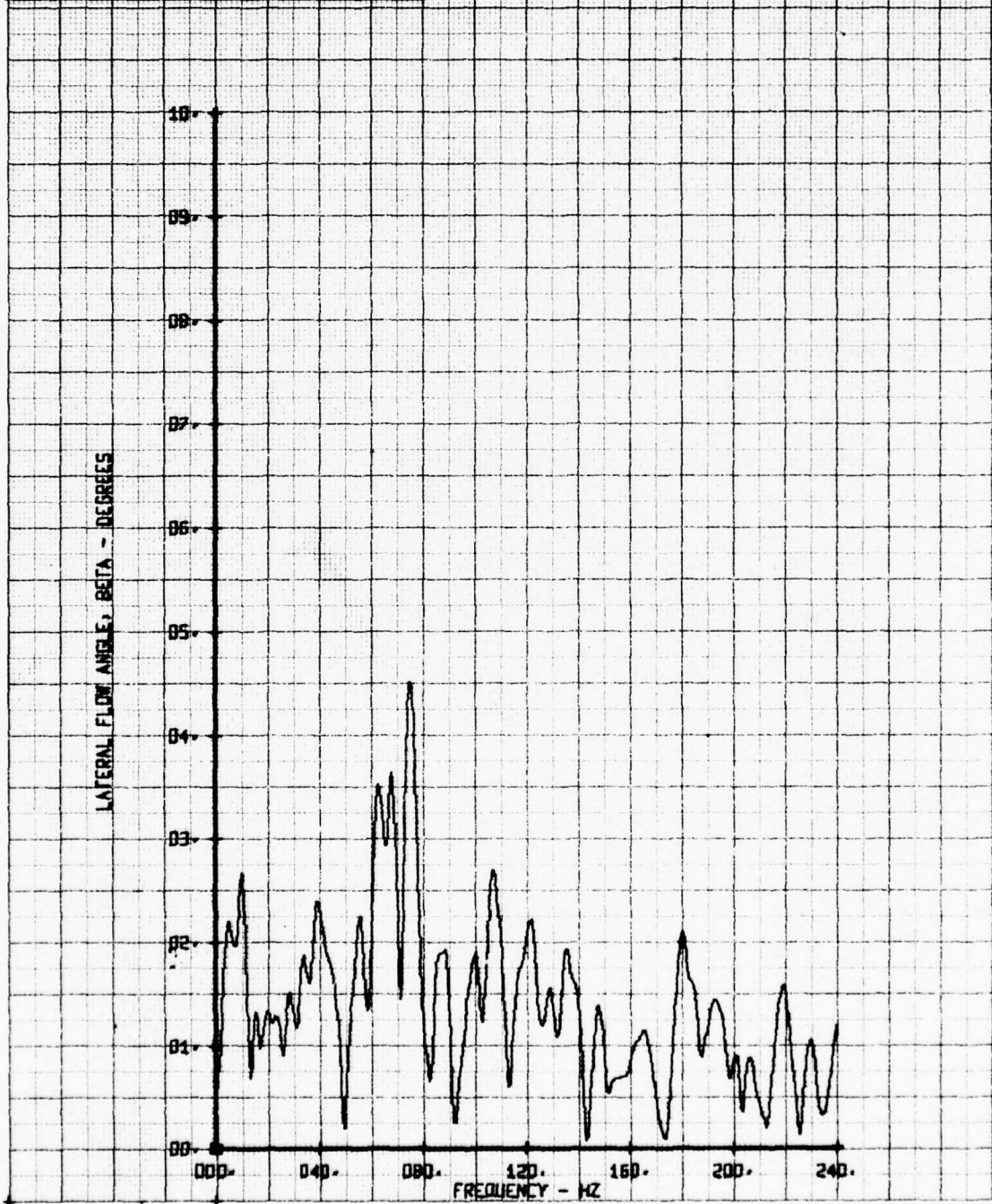
LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



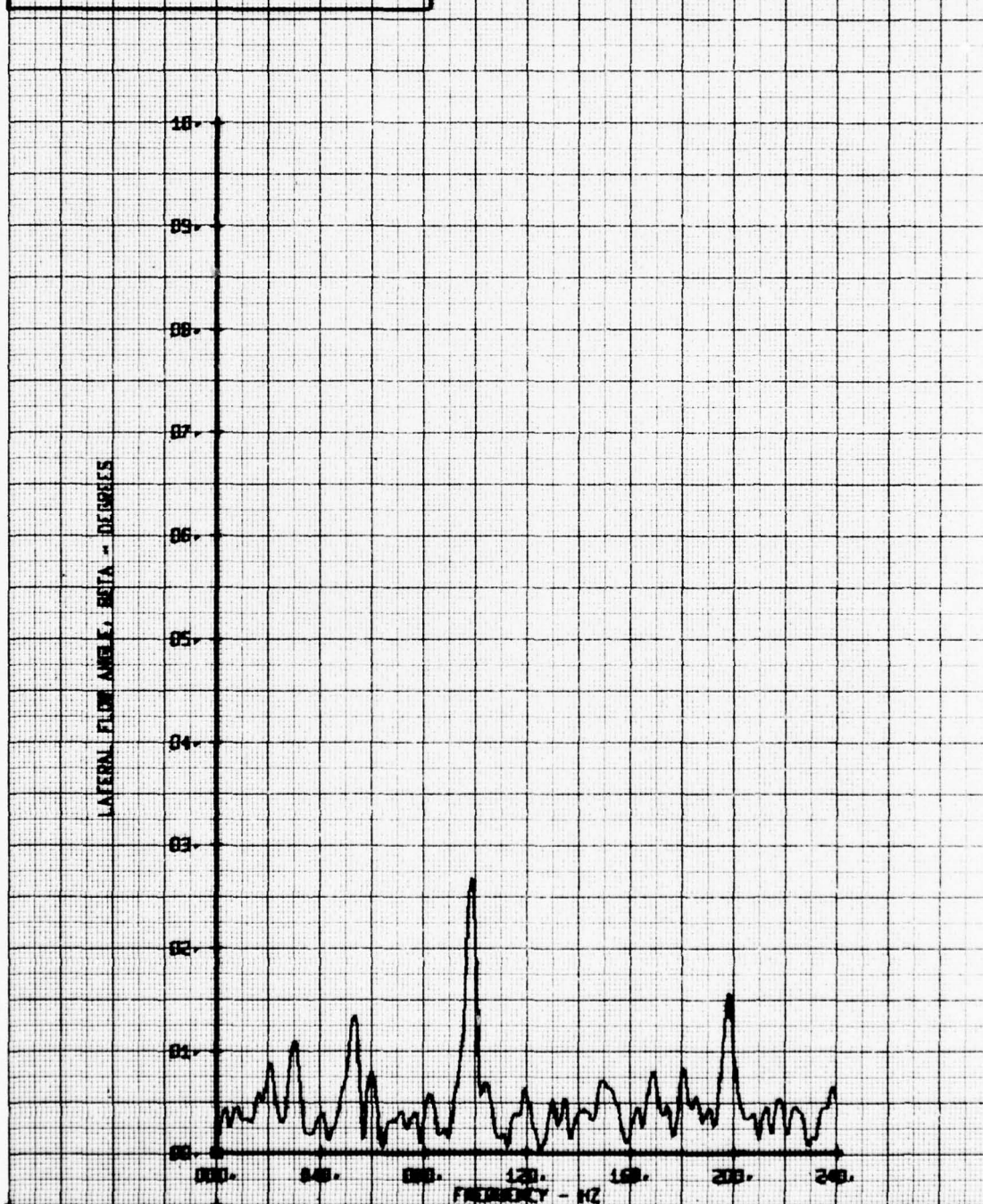
HOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR EXIT RASTE SYS NO BLD
 RUN 172 TP 6

LEGEND
 CH PARAMETER
 BS BETA



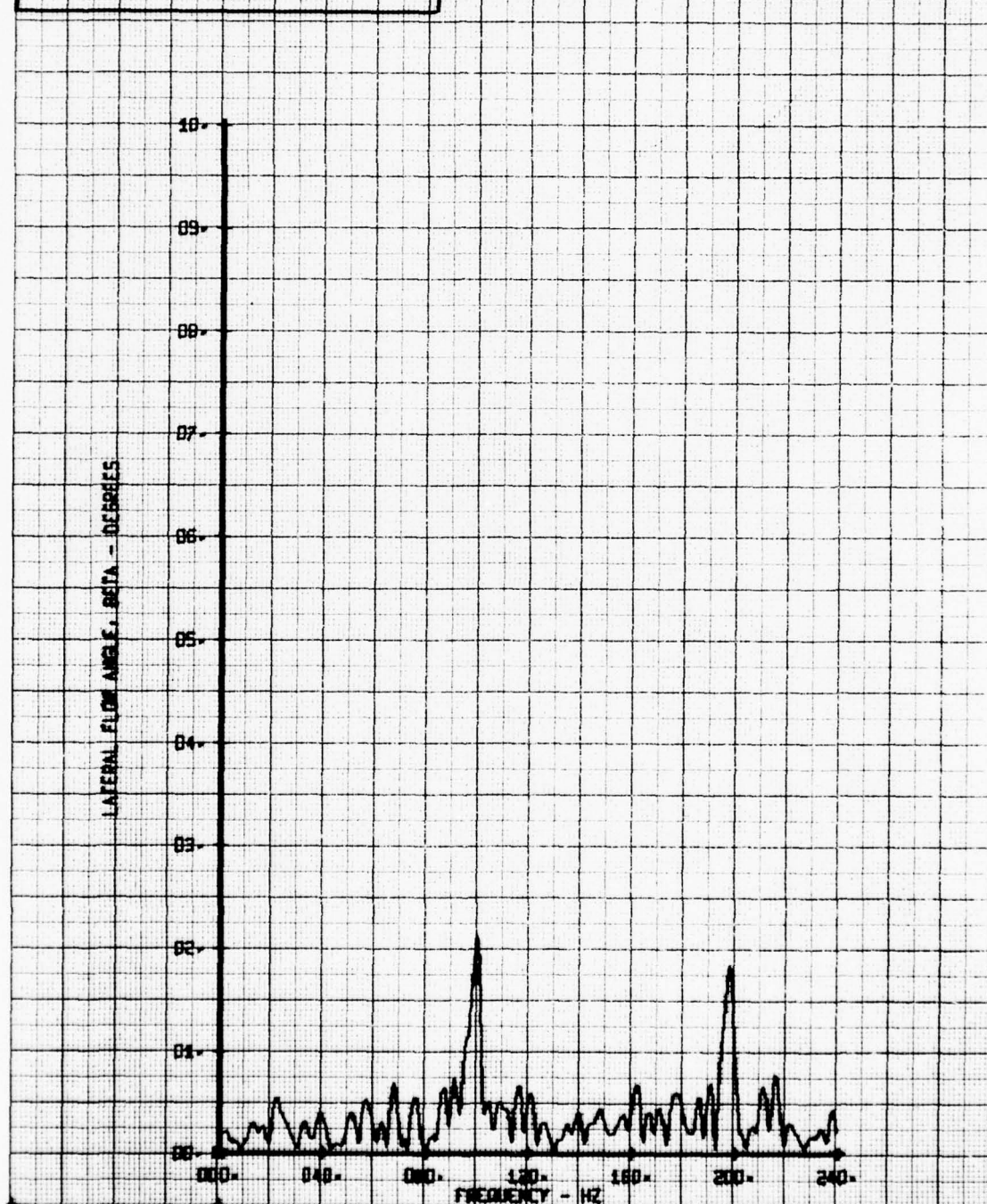
NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF ATR E-MT BASIC SYS NO BLD
RUN 172 TP 7

LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 810
RUN 172 TP B

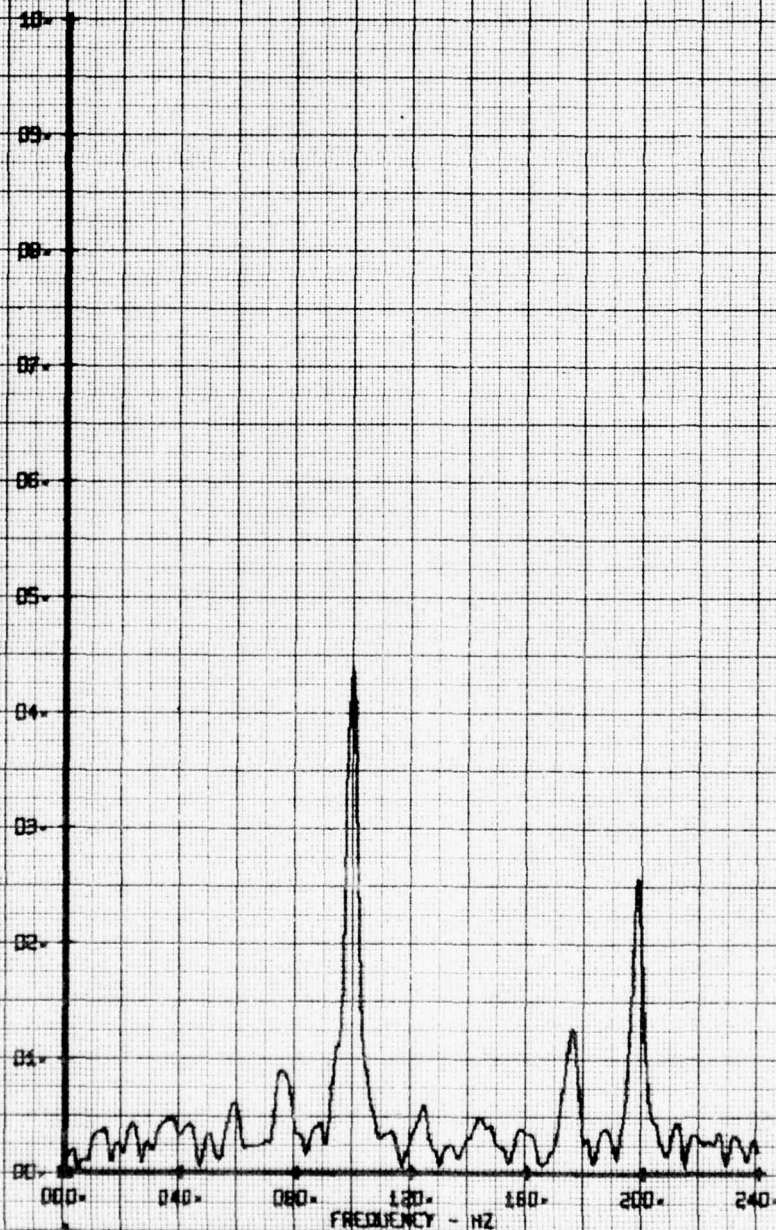
LEGEND
CH 65 PARAMETER
BETA



NOT FILM WIRE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW RATE SYS NO. 10
RUN 112 TP 3

LEGEND
CN PARAMETER
65 BETA

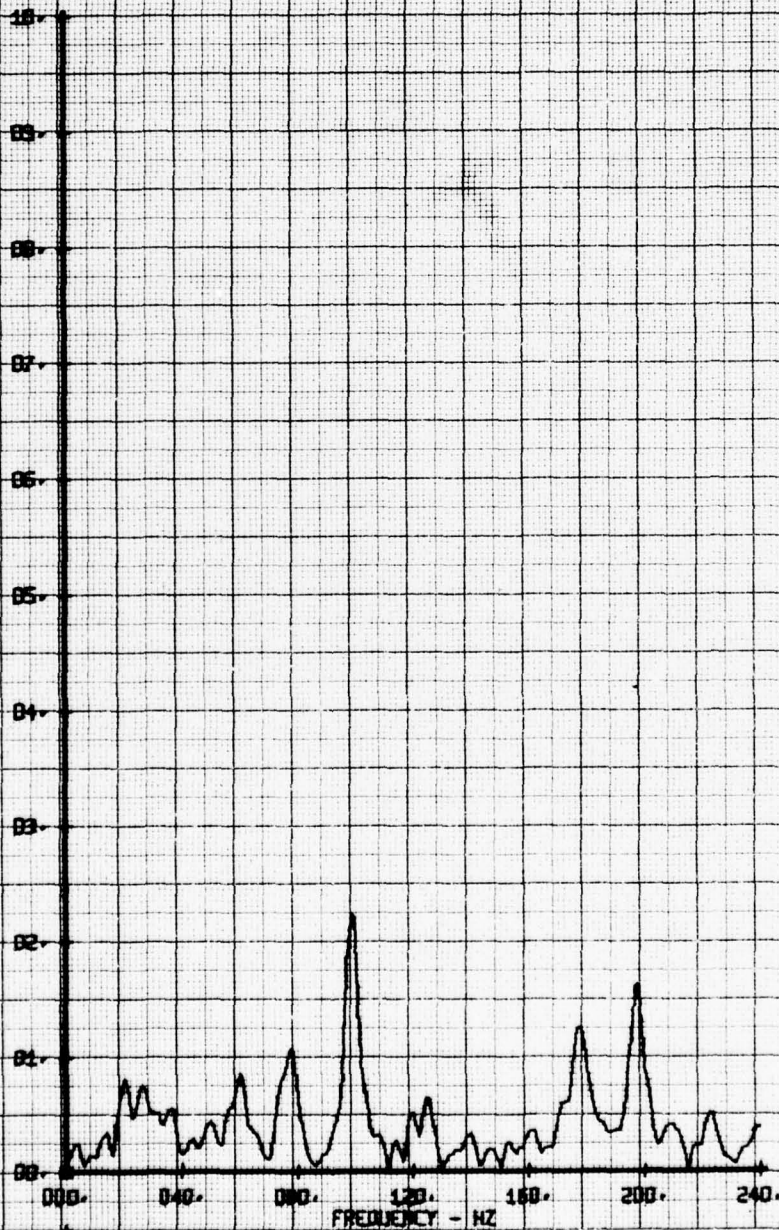
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR JET BASIC SYS NO 010
RUN 172 TP 30

LEGEND
CN PARAMETER
65 BETA

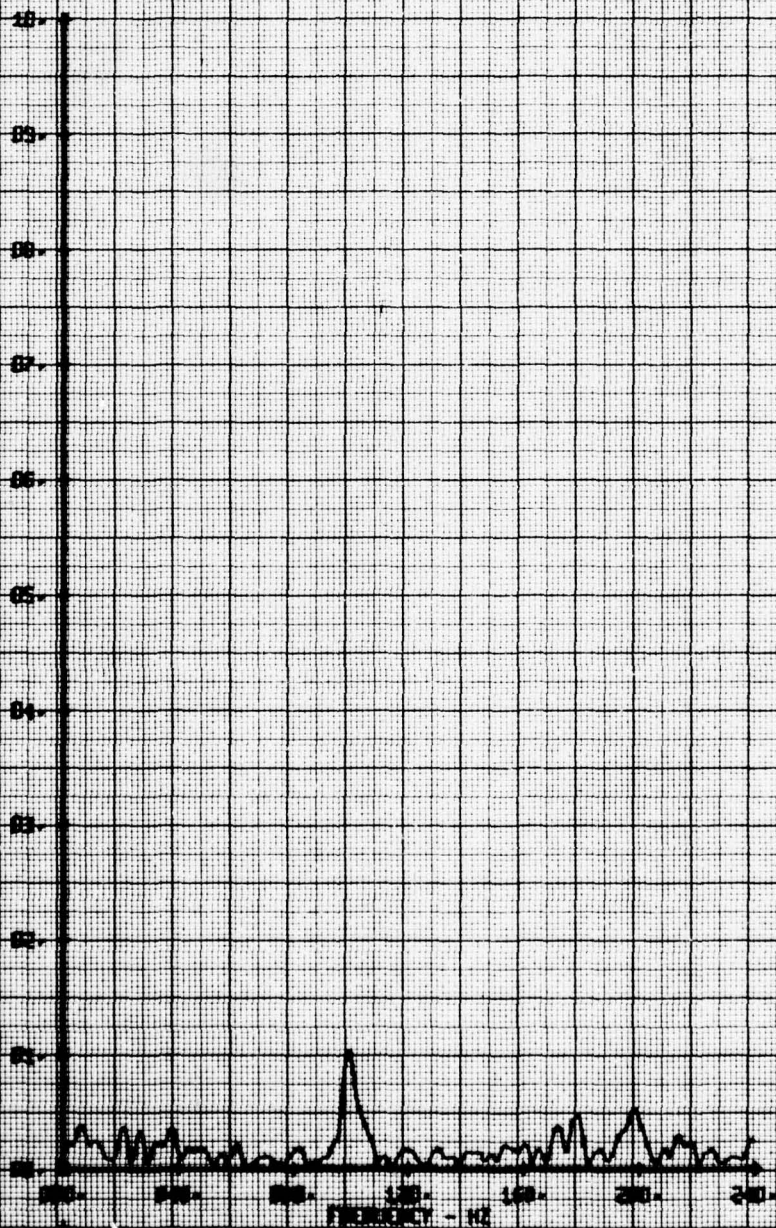
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW RATE ON SYS NO. 10
SER 172 TP 11

LEGEND
CH PARAMETER
65 BETA

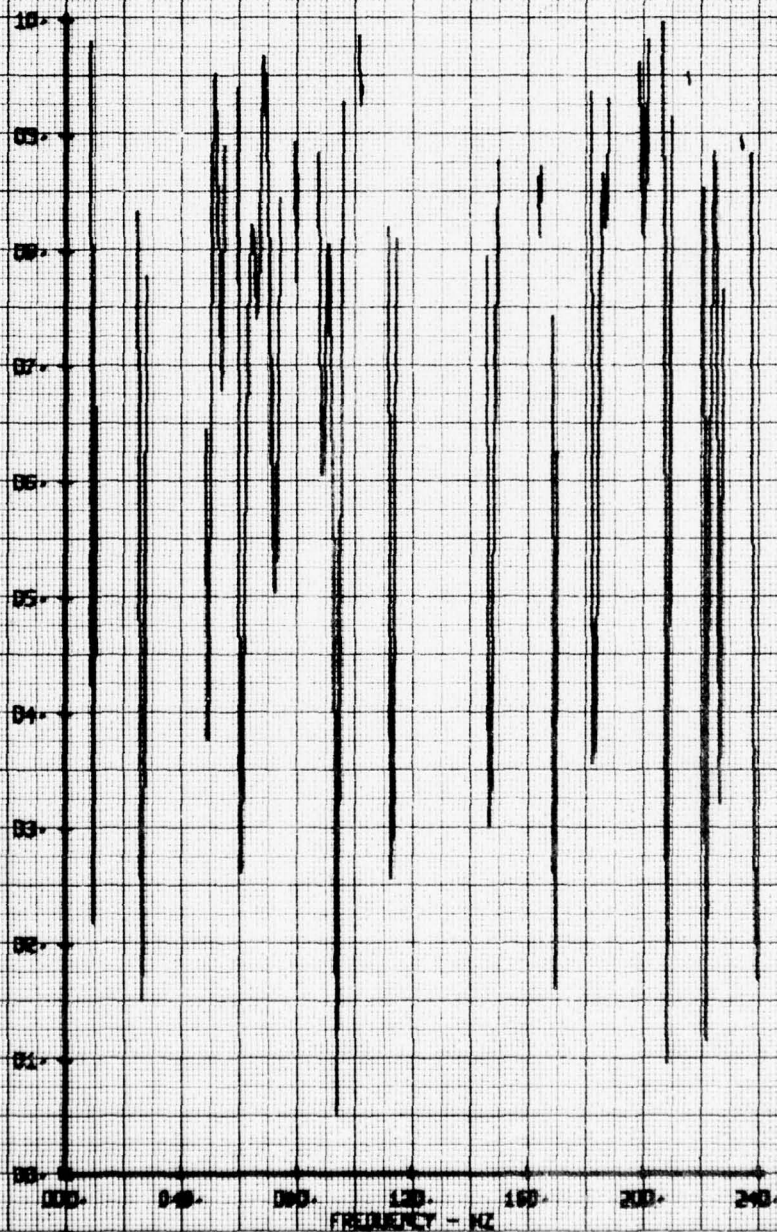
LATERAL FLUX AMPLITUDE - DBM



HOT FILM WIRE FREQUENCY ANALYSIS
 EFFECT OF AIR EXIT BASIC SYS NO BLD
 RUN 1/2 TP 3

LEGEND
 CH PARAMETER
 66 V-ALPHA

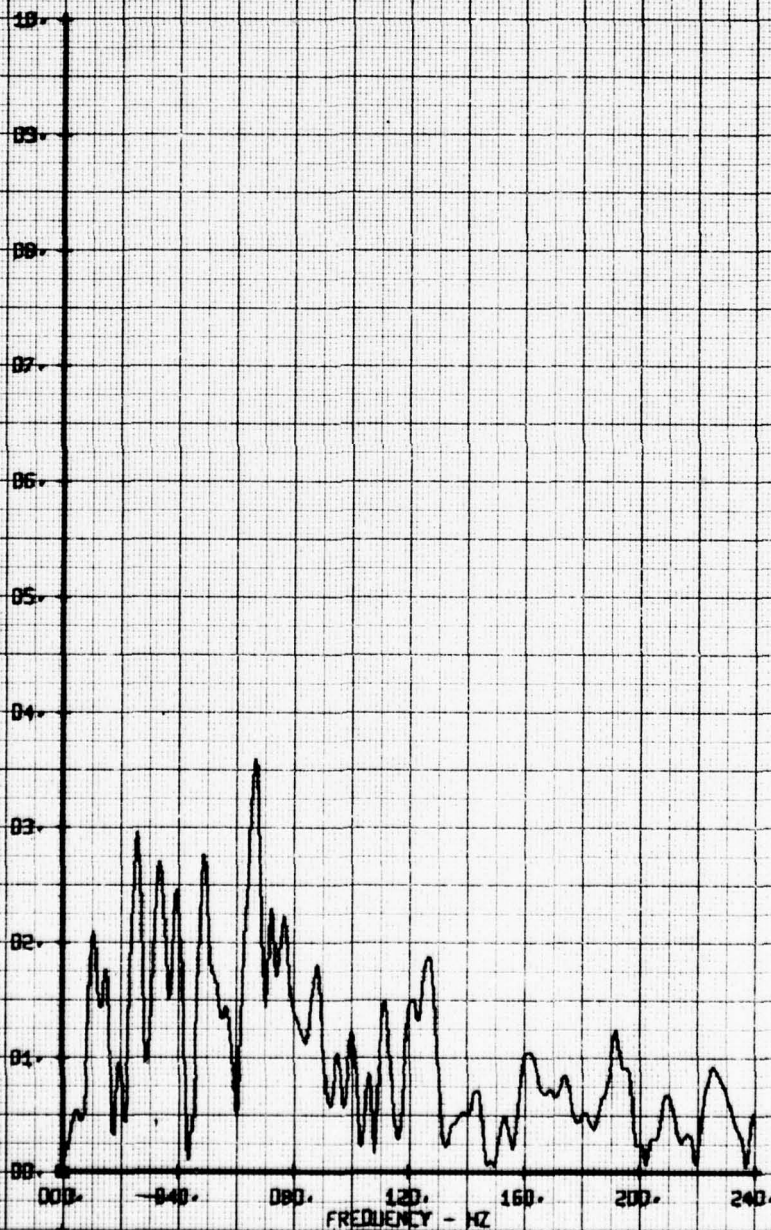
X-Y VELOCITY COMPONENT V-ALPHA FPS



NOY FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR E-RT BASIC SYS NO 81.0
RUN 172 TF 6

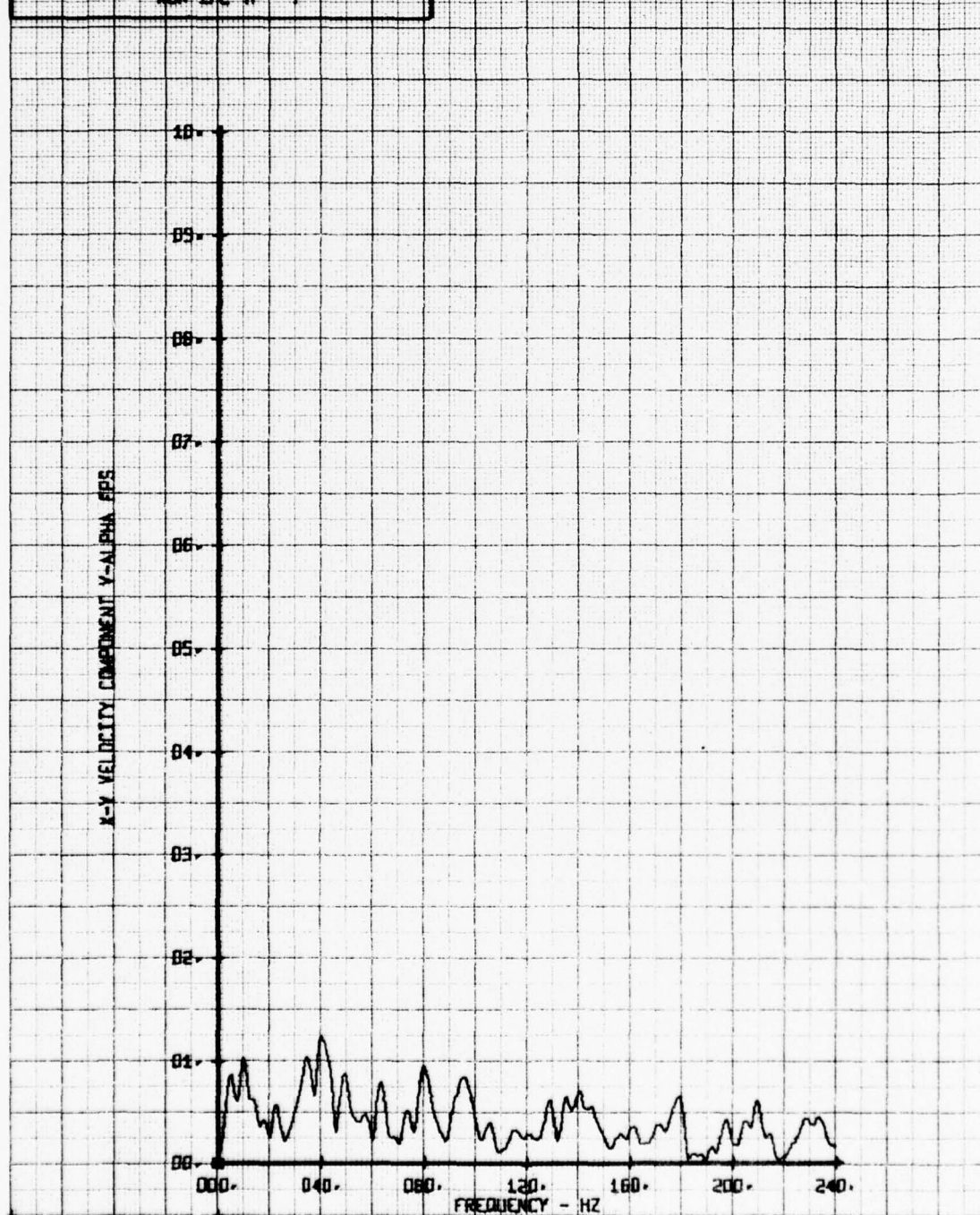
LEGEND
ON PARAMETER
66 Y-ALPHA

X-Y VELOCITY COMPONENT Y-ALPHA FPS



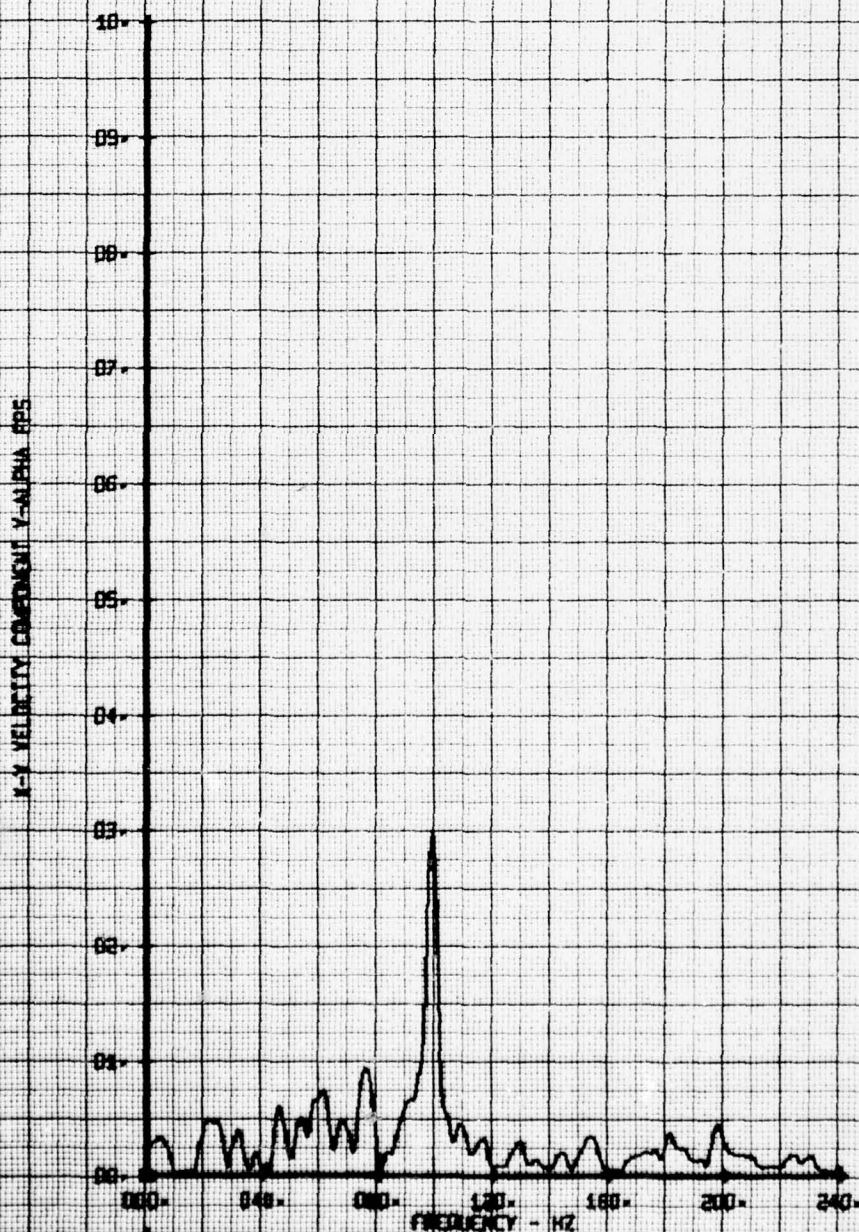
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EFFECT OF AIR EXIT BASIC SYS NO BLD
RUN 172 TP 7

LEGEND
CH 66
PARAMETER
V-ALPHA



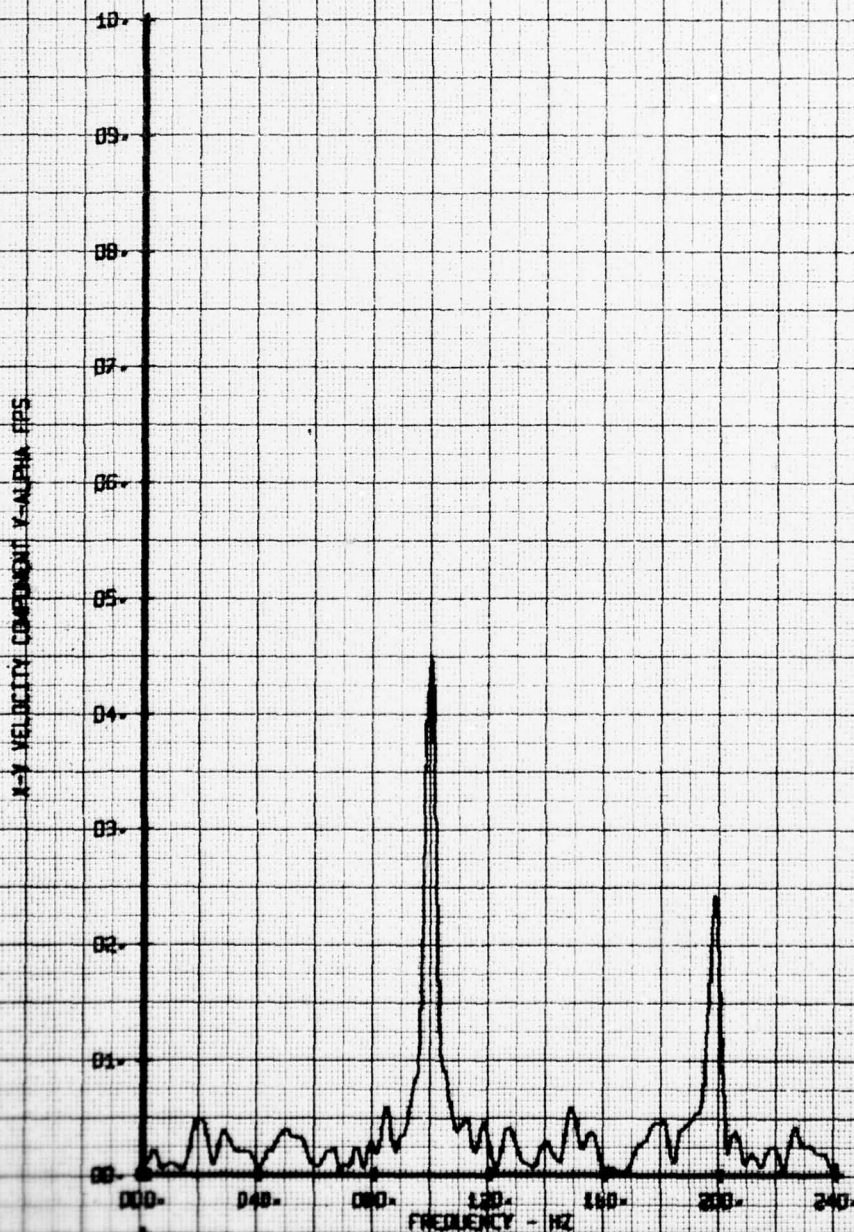
NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 81.0
RUN 172 TP 8

LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 810
RUN 172 TP 9

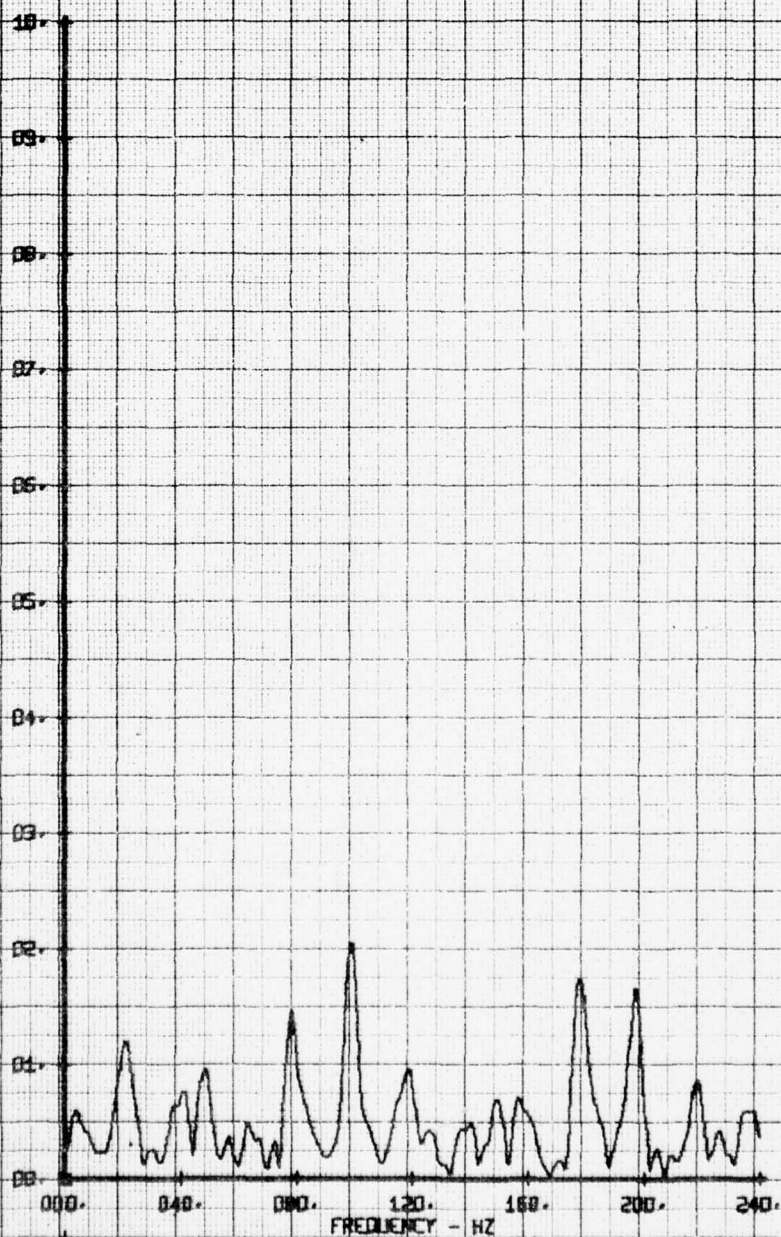
LEGEND
CH PARAMETER
66 V-ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR EXIT BASIC SYS NO BLD
RUN 172 TP 10

LEGEND
CH PARAMETER
66 V-ALPHA

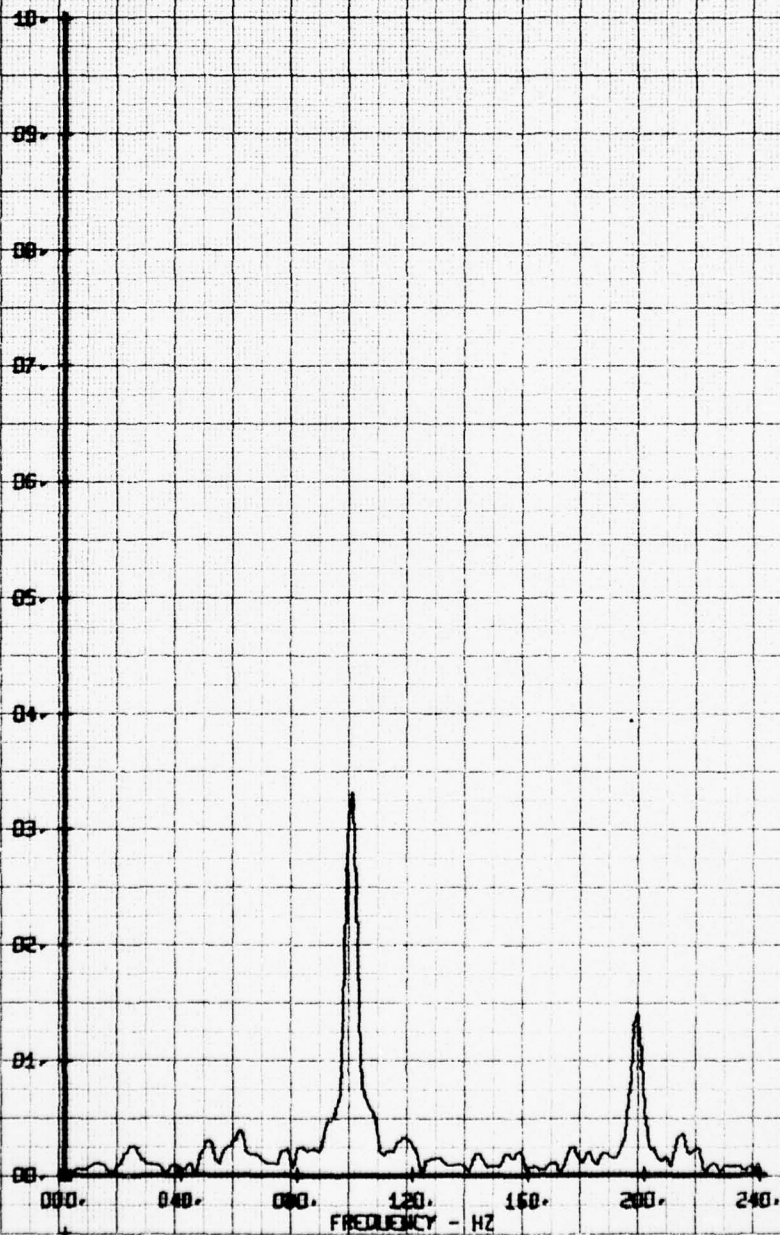
X-Y VELOCITY COMPONENT V-ALPHA FPS



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO 810
RUN 172 TP 11

LEGEND
CH PARAMETER
66 V-ALPHA

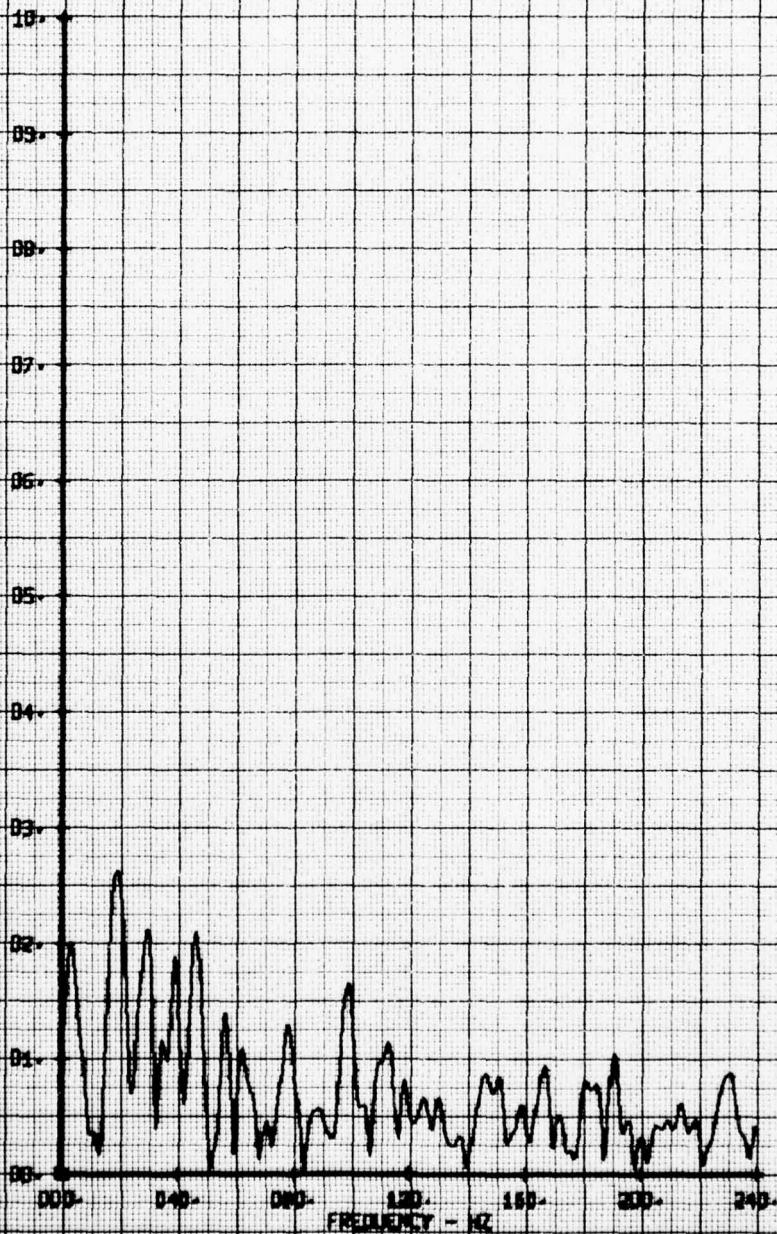
X-Y VELOCITY COMPONENT V-ALPHA RPS



NOI FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS NO 810
RUN 172 TP 3

LEGEND
CH PARAMETER
65 Y-BETA

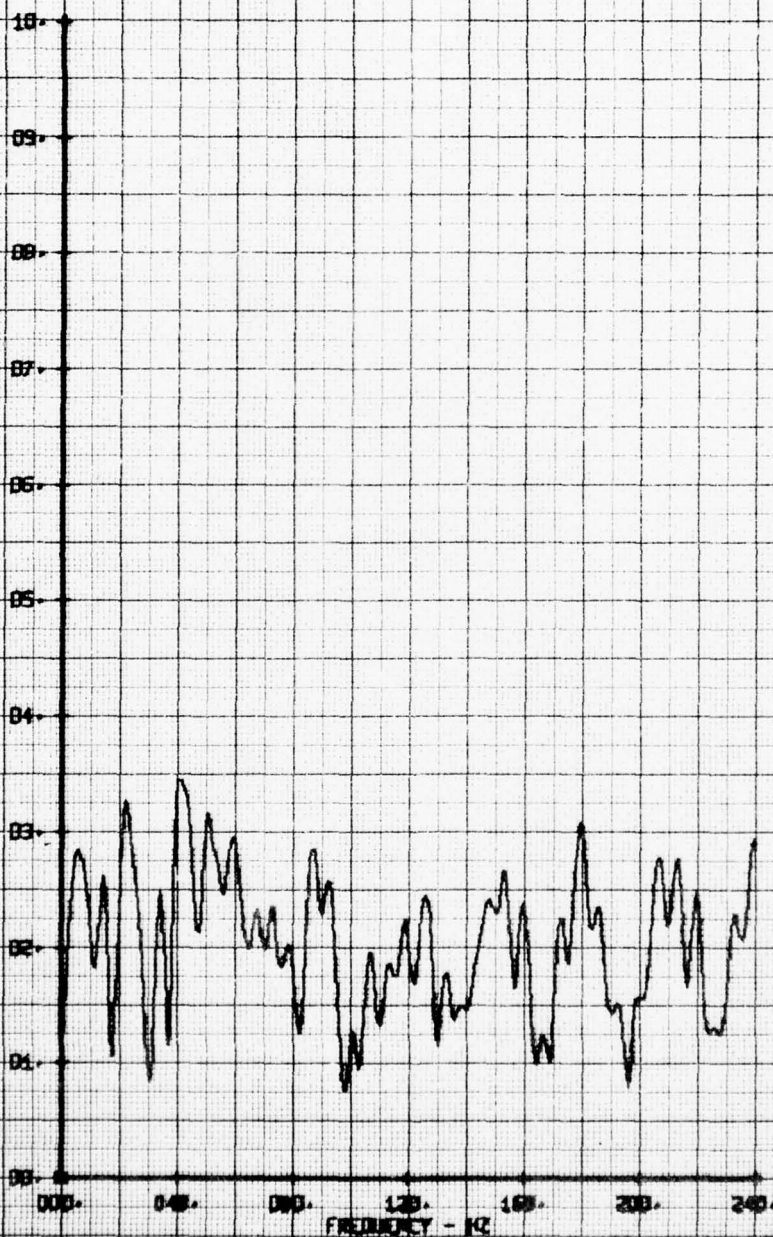
X-2 VELOCITY COMPONENT Y-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EXIT BASIC SYS NO BLD
RUN 172 TP 4

LEGEND
CH PARAMETER
65 V-BETA

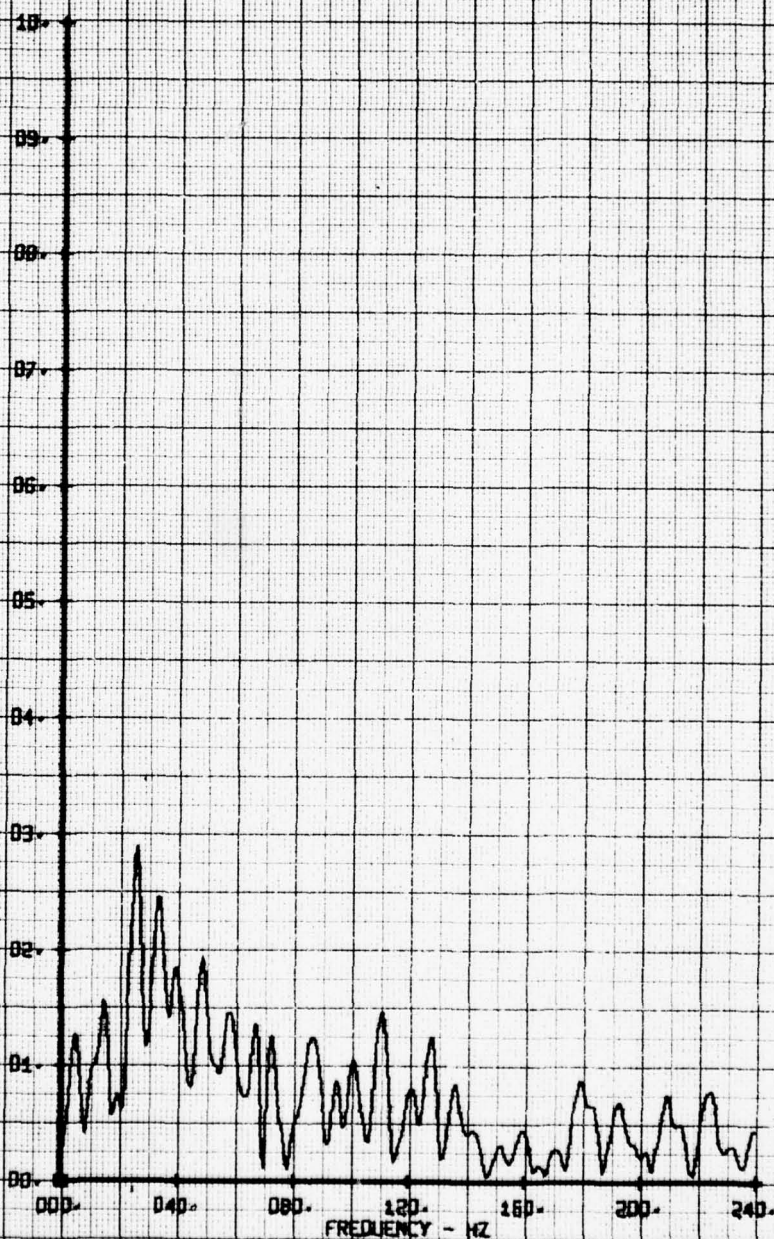
X-2 VELOCITY COMPONENT V-BETA FHS



NOT FILM WAVE FREQUENCY ANALYSIS
 EFFECT OF AIR ENT RASTIC SYS NO 01.0
 RUN 172 TP 6

LEGEND
 CH PARAMETER
 BS Y-BETA

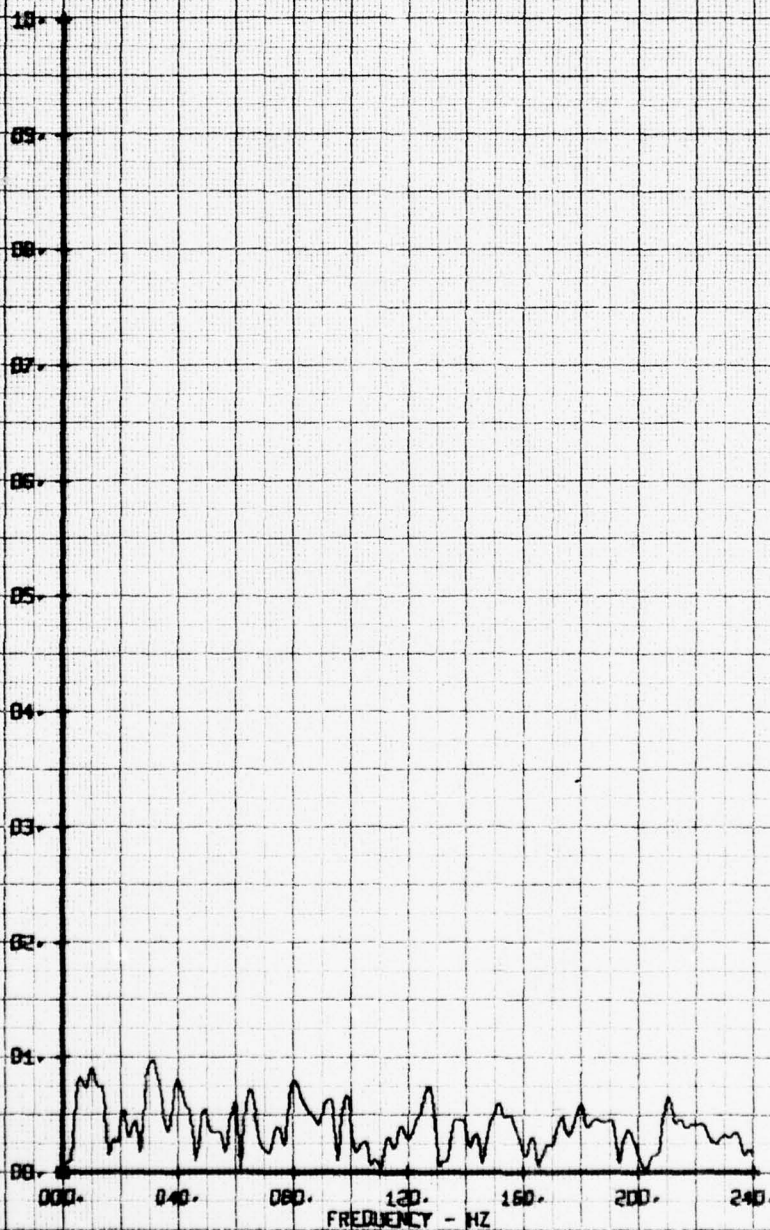
X-Z VELOCITY COMPONENT Y-BETA FPS



HOT FILM WAVE FREQUENCY ANALYSIS
 EFFECT OF AIR C-NT BASIC SYS NO 810
 RUN 172 TP 7

LEGEND
 CH PARAMETER
 65 Y-BETA

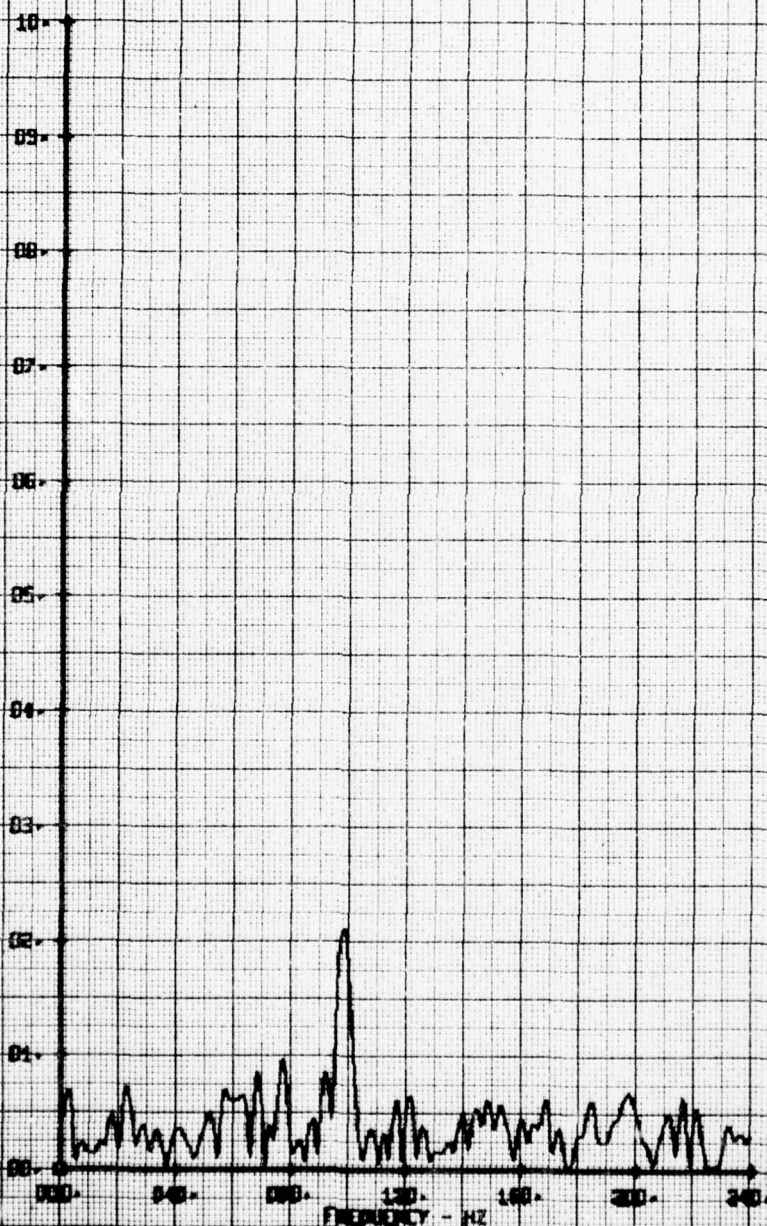
X-Z VELOCITY COMPONENT Y-BETA FFS



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS NO. 810
SERV 172 IP 8

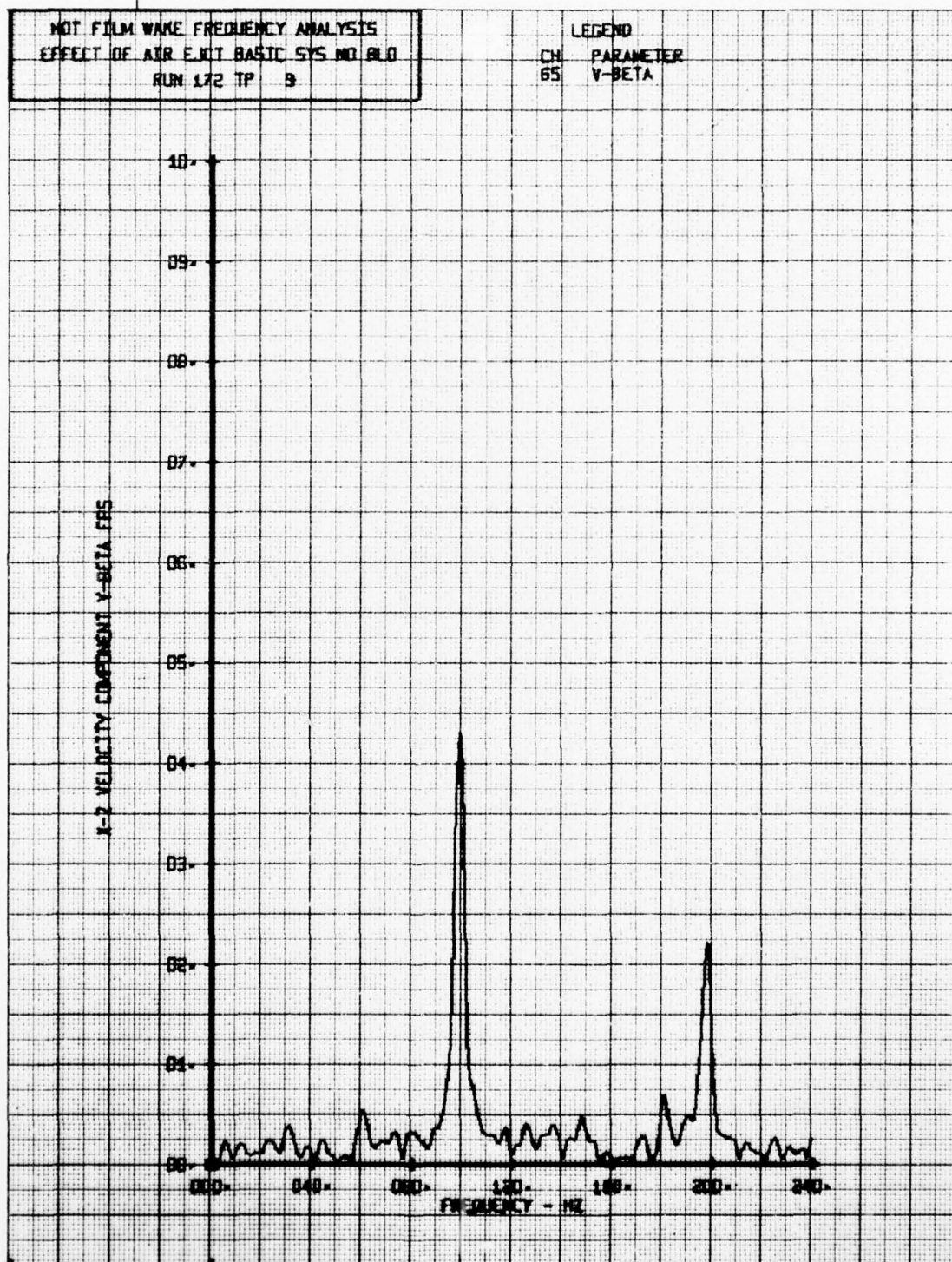
LEGEND
CH 65
PARAMETER
V-BETA

X-2 VELOCITY COMPONENT V-BETA FPS



NOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR EXIT BASIC SYS NO 810
 RUN 172 TP 9

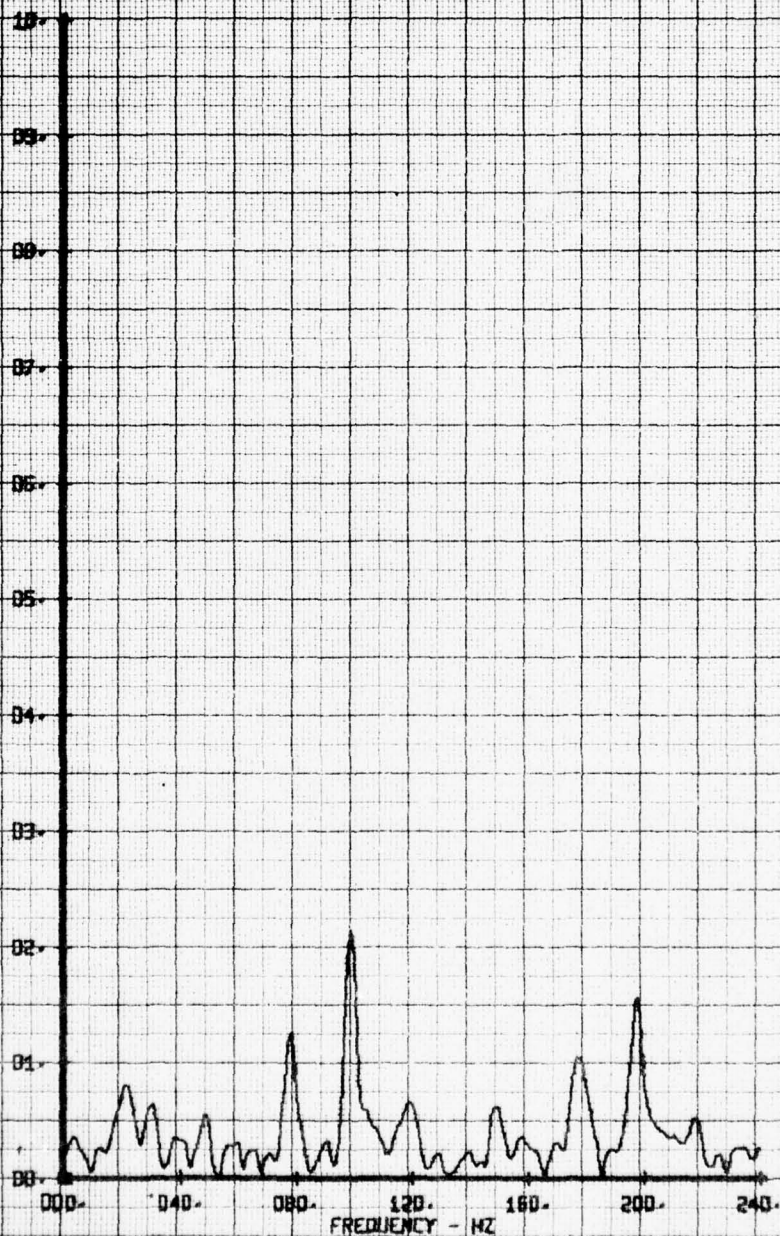
LEGEND
 CH PARAMETER
 65 V-BETA



HOP FILM WAVE FREQUENCY ANALYSIS
 EFFECT OF AIR FLOW BASIC SYS NO 81.0
 RUN 172 TP 30

LEGEND
 CH PARAMETER
 BS V-BETA

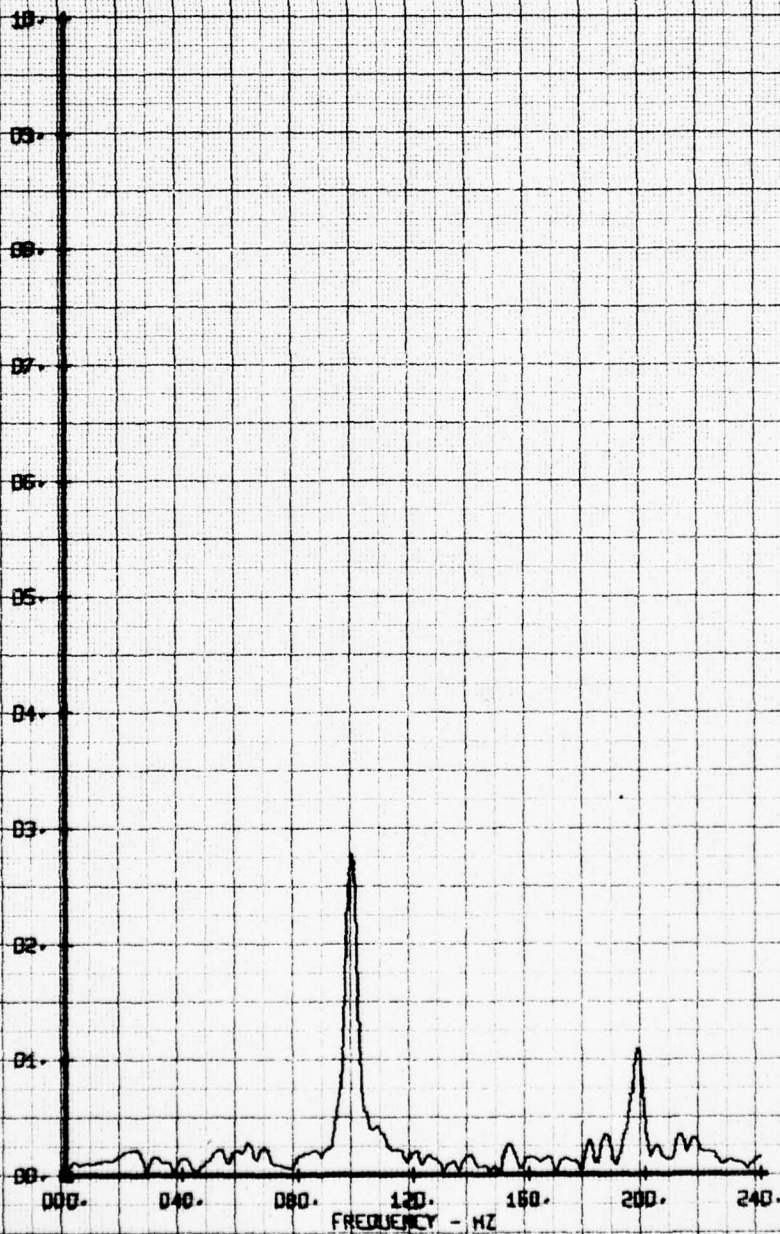
X-2 VELOCITY COMPONENT V-BETA FBS



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW RATIO SYS NO 810
RUM 172 TP 11

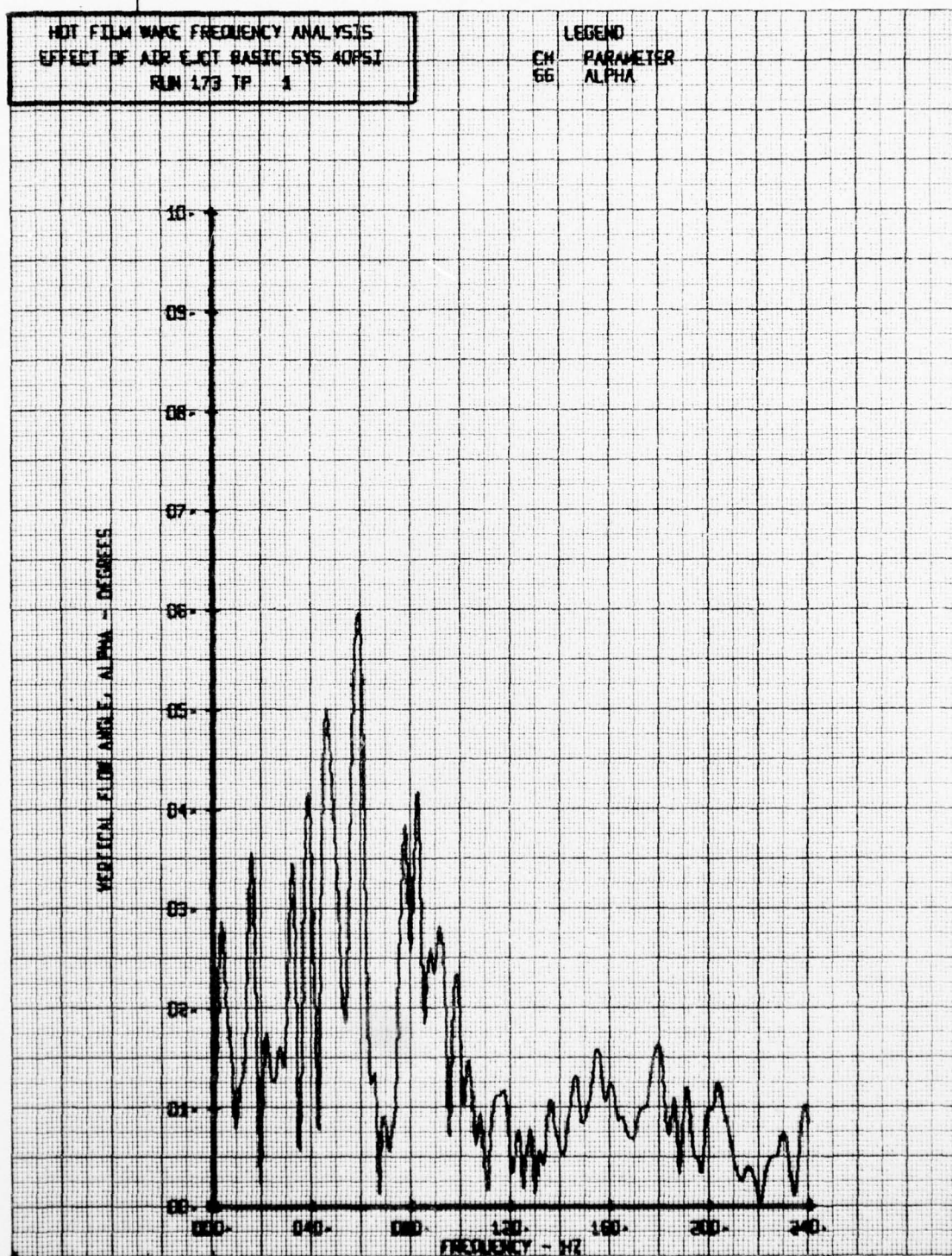
LEGEND
CH PARAMETER
GS Y-BETA

X-Z VELOCITY COMPONENT Y-BETA RMS



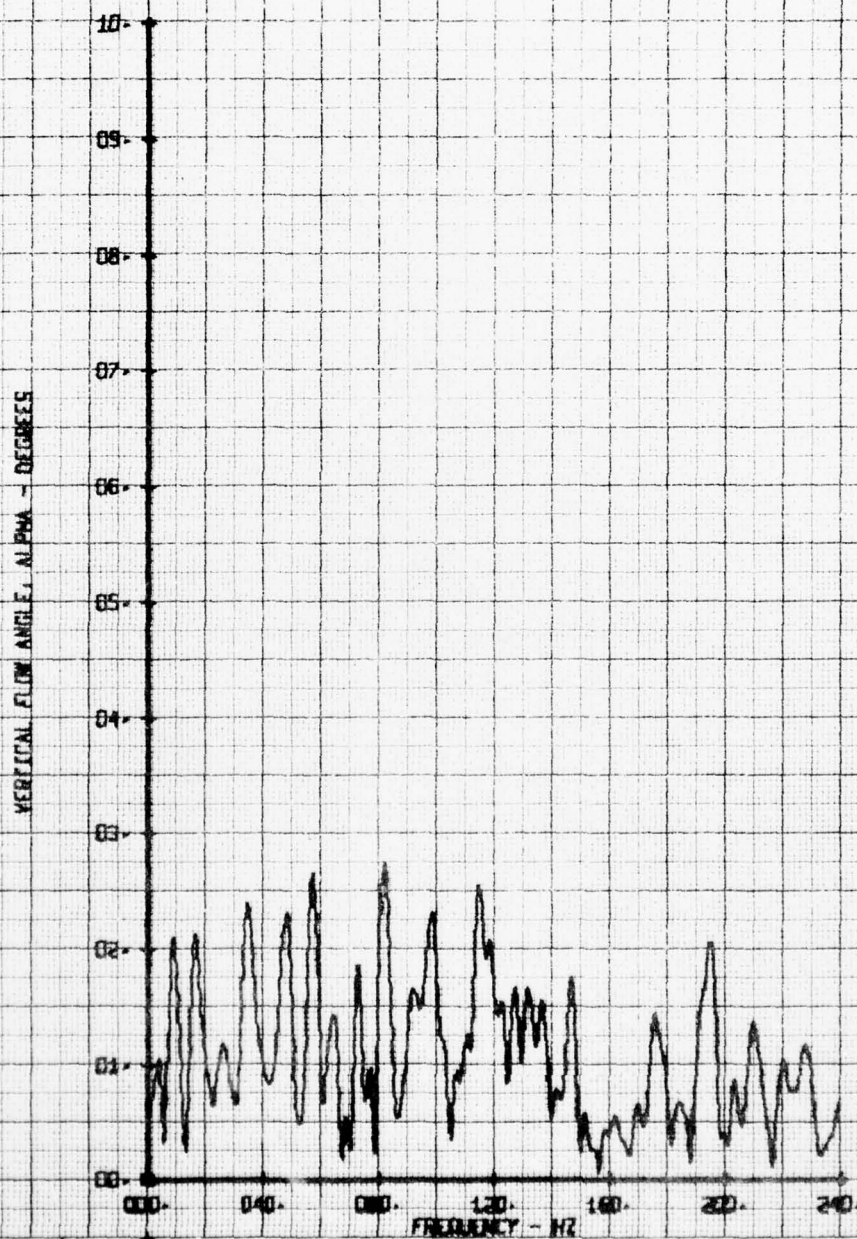
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PSI
RUN 173 TP. 1

LEGEND
CH 66 PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PSI
RUN 173 TP 2

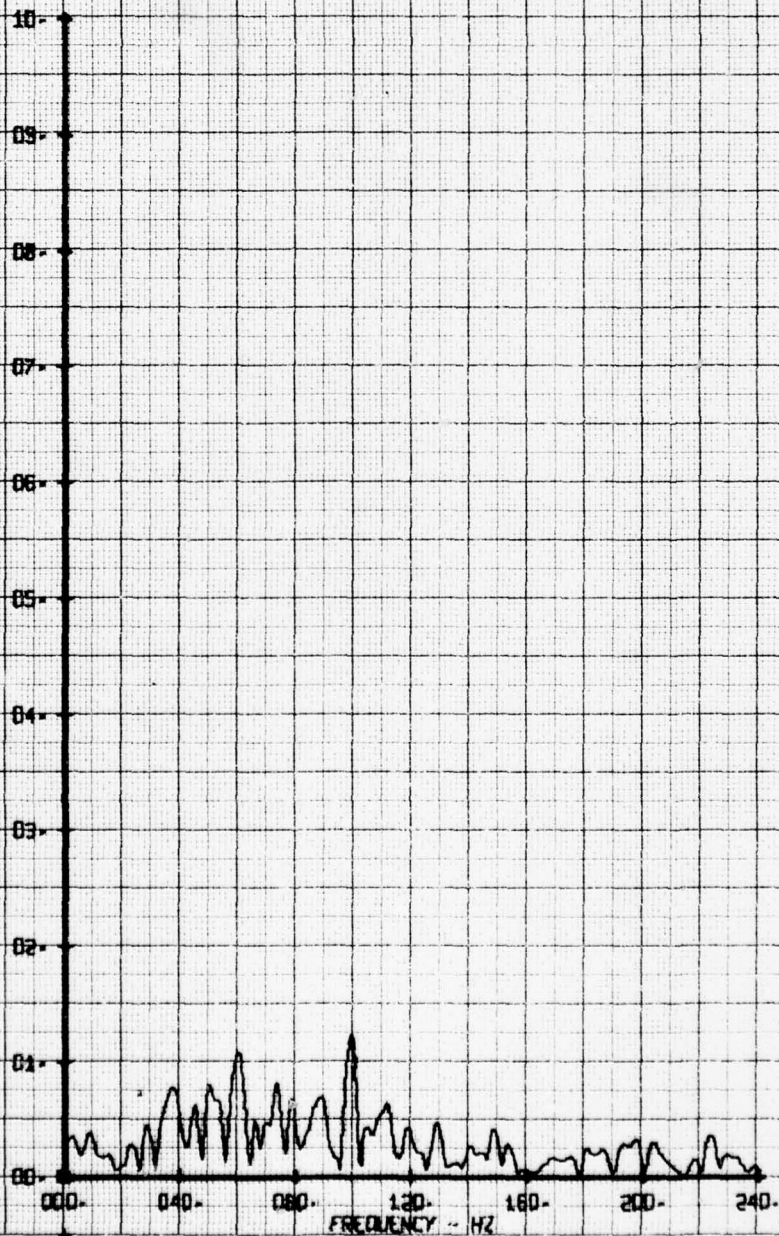
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS ADPST
RUN 179 TP 9

LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE - ALPHA - DEGREES



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BOEING VERTOL CO PHILADELPHIA PA
INTERACTIONAL AERODYNAMICS OF THE SINGLE ROTOR HELICOPTER CONF--ETC(U)
SEP 78 P F SHERIDAN

F/G 1/3

DAAJ02-77-C-0020

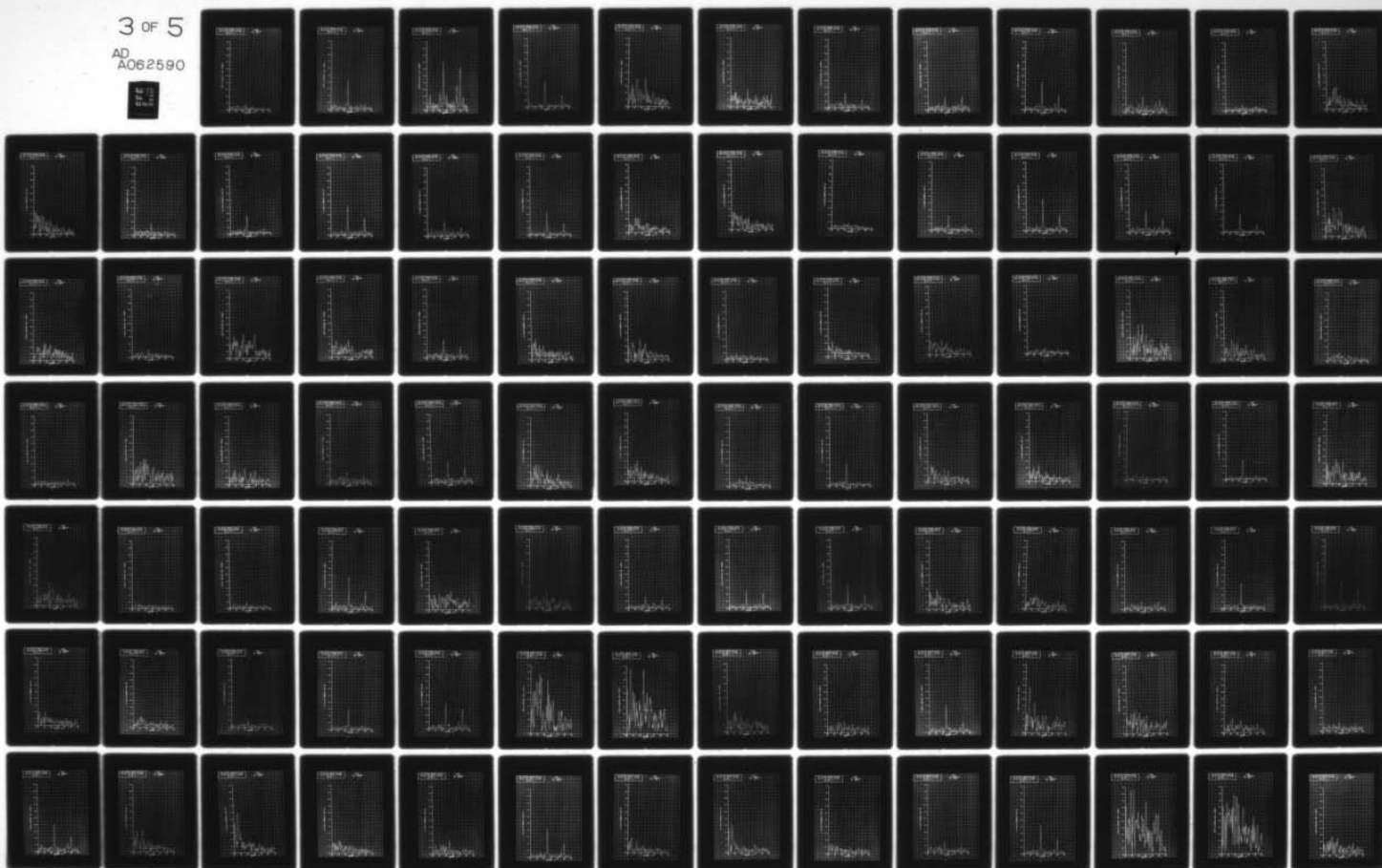
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3 OF 5

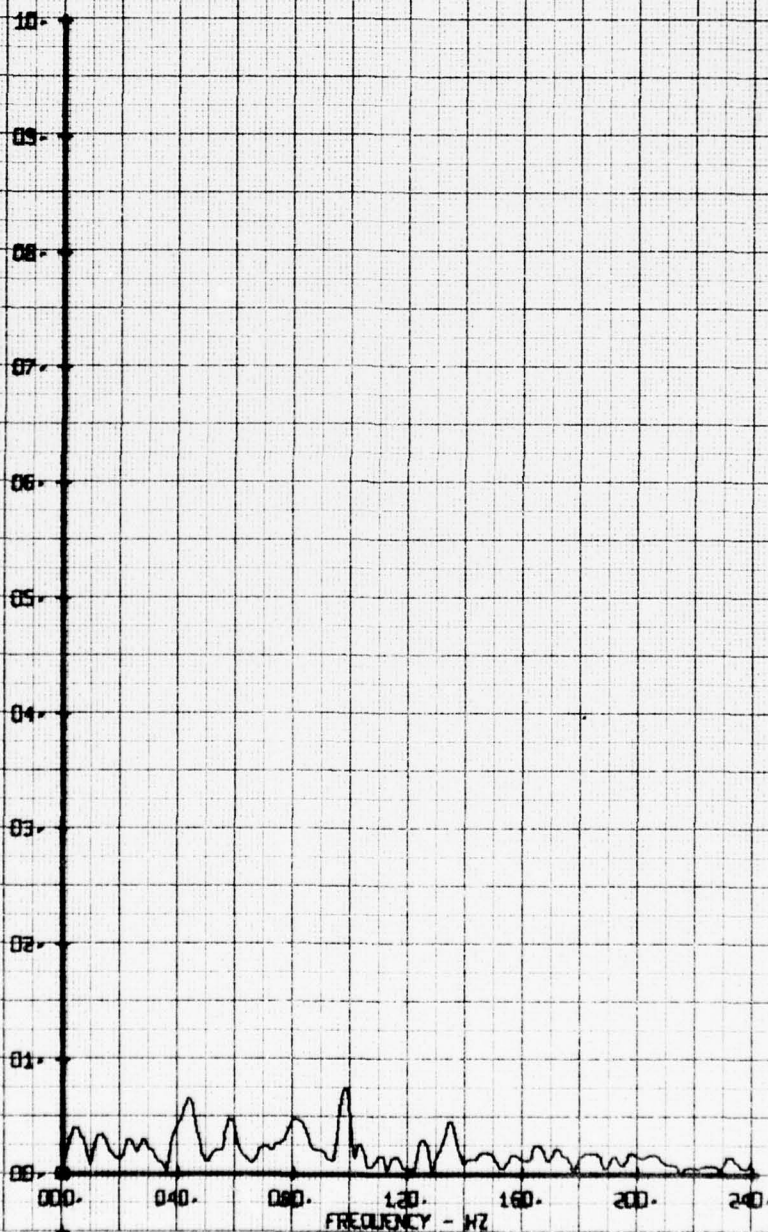
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HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET BASIC SYS ADPST
RUN 173 TP 4

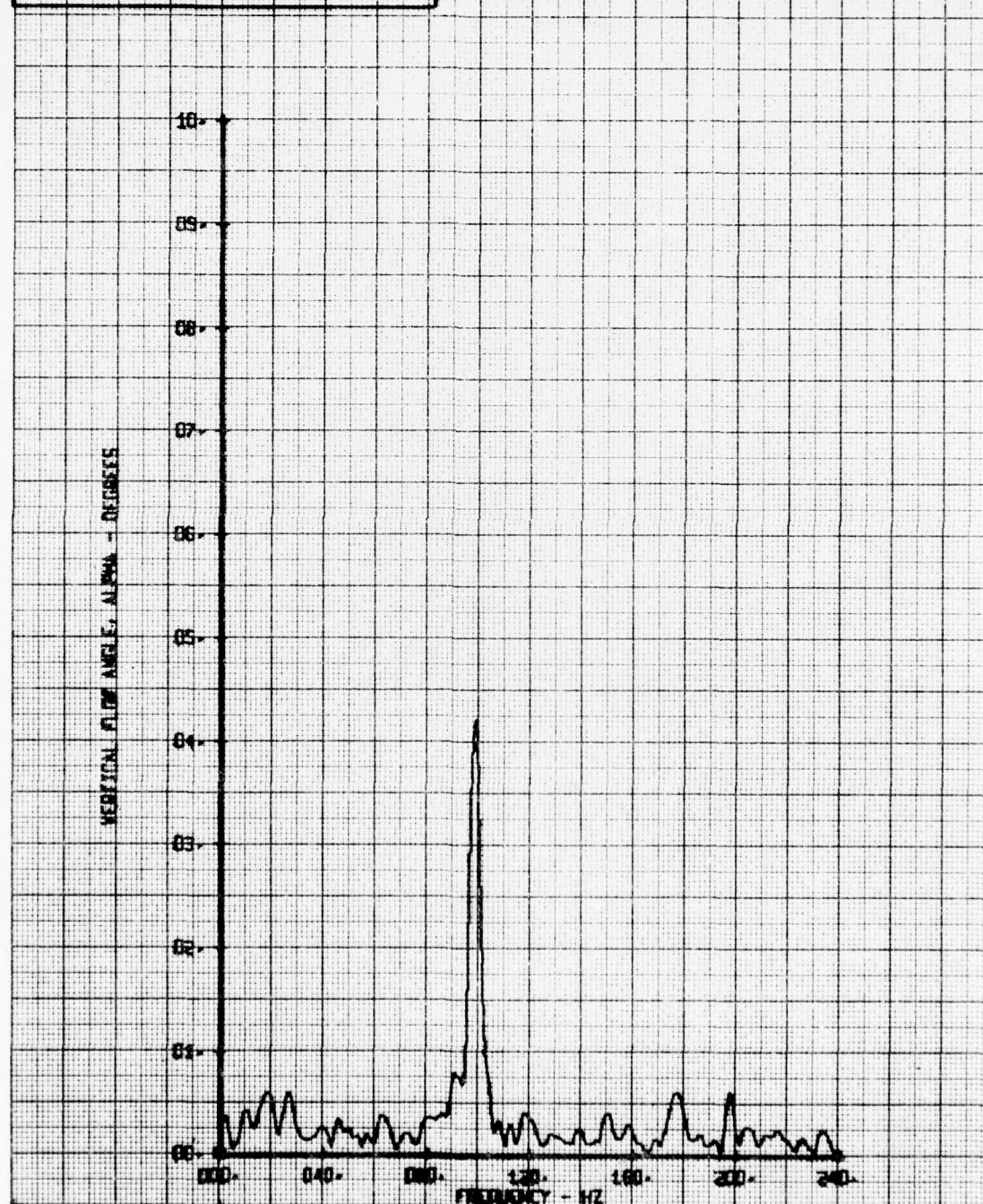
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



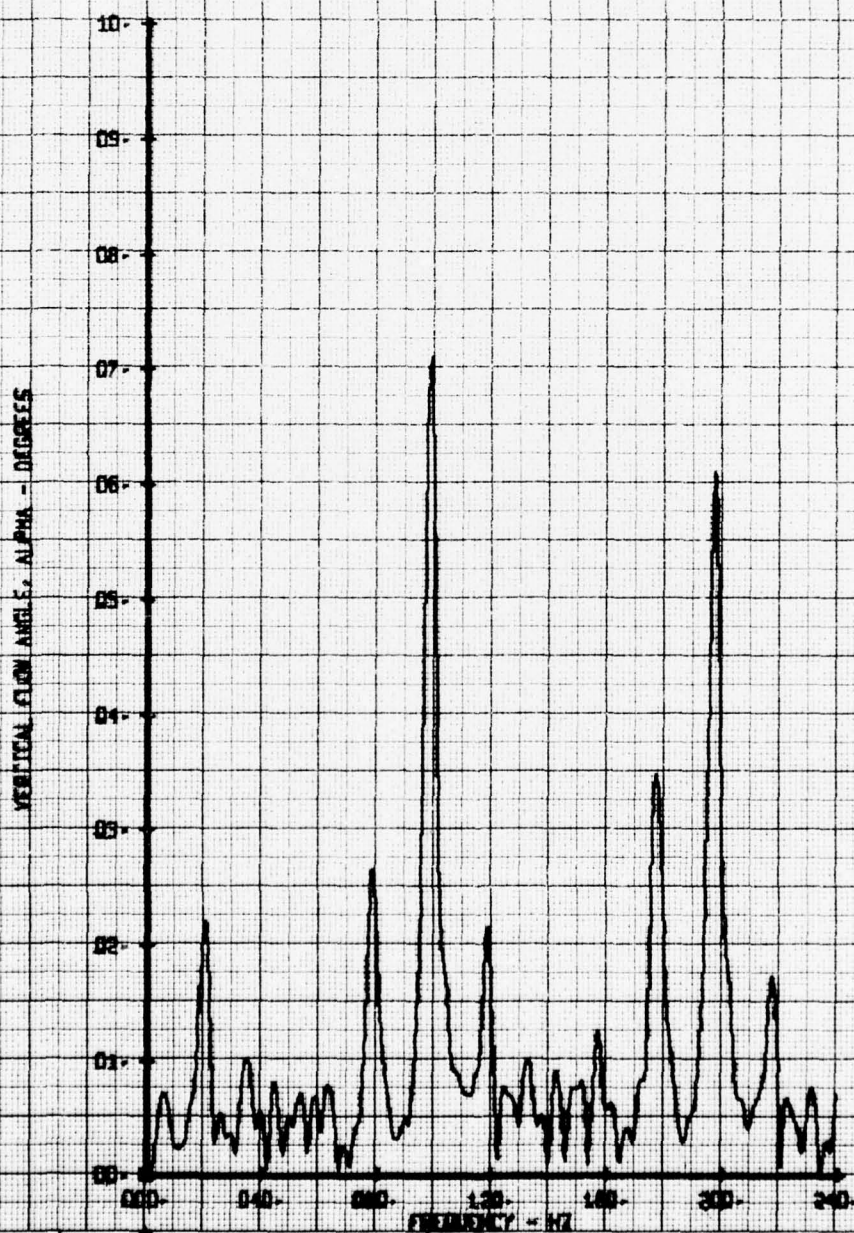
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EXIT BASIC SYS ADPST
RUN 173 TP 5

LEGEND
CH 66
PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 10PSI
RUN 173 TP 6

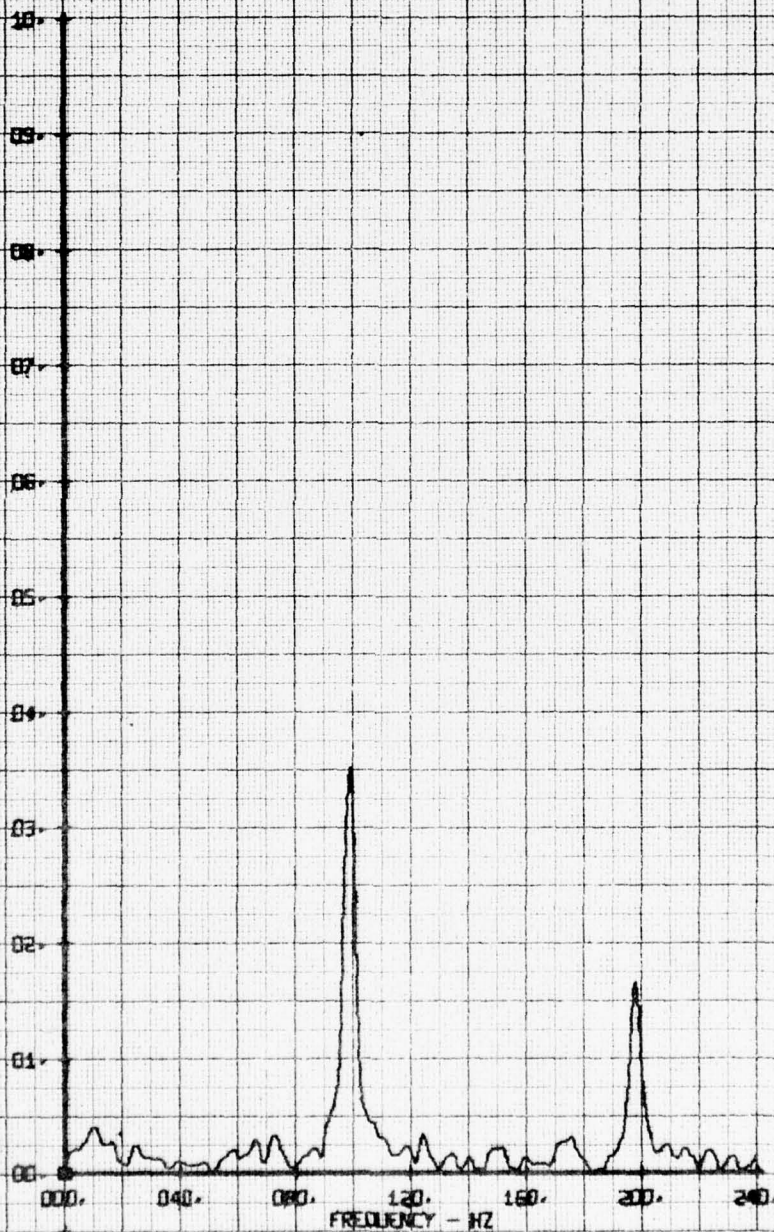
LEGEND
CH 66 PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS ADPST
RUN 173 TP 7

LEGEND
CH PARAMETER
66 ALPHA

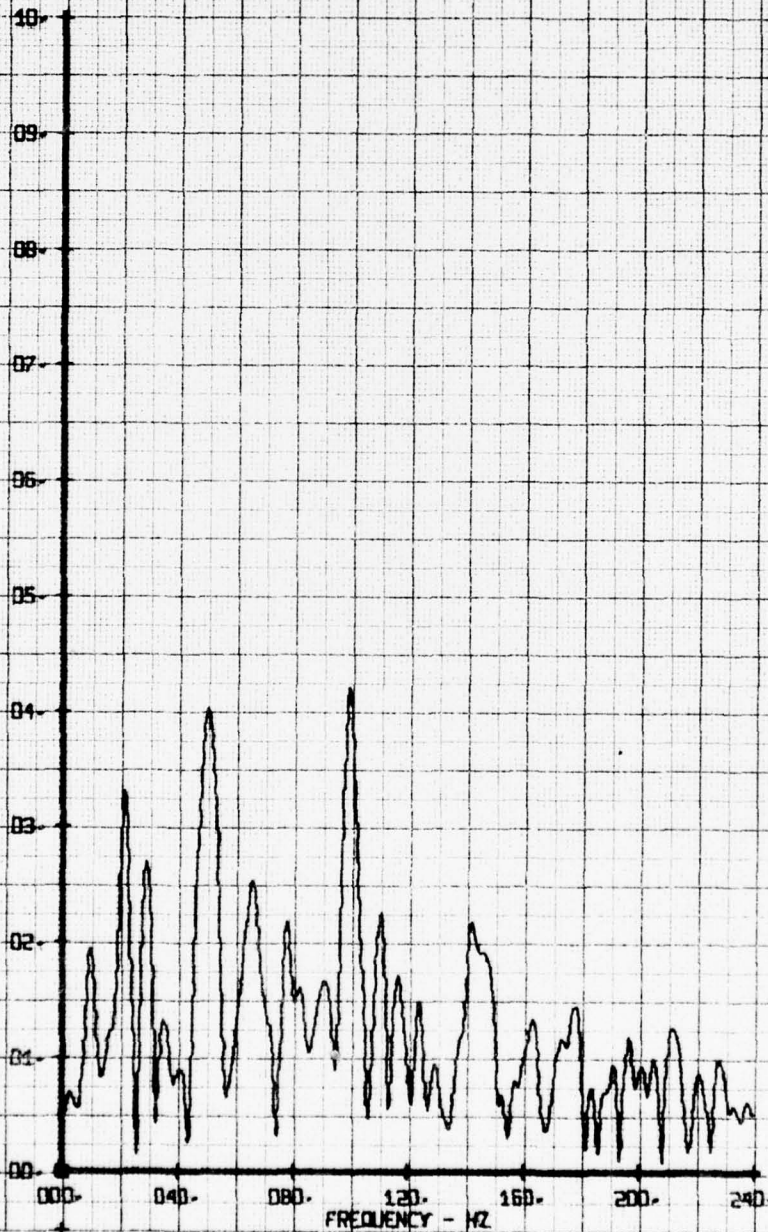
VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40F5T
RUN 173 TP 1

LEGEND
CH PARAMETER
65 BETA

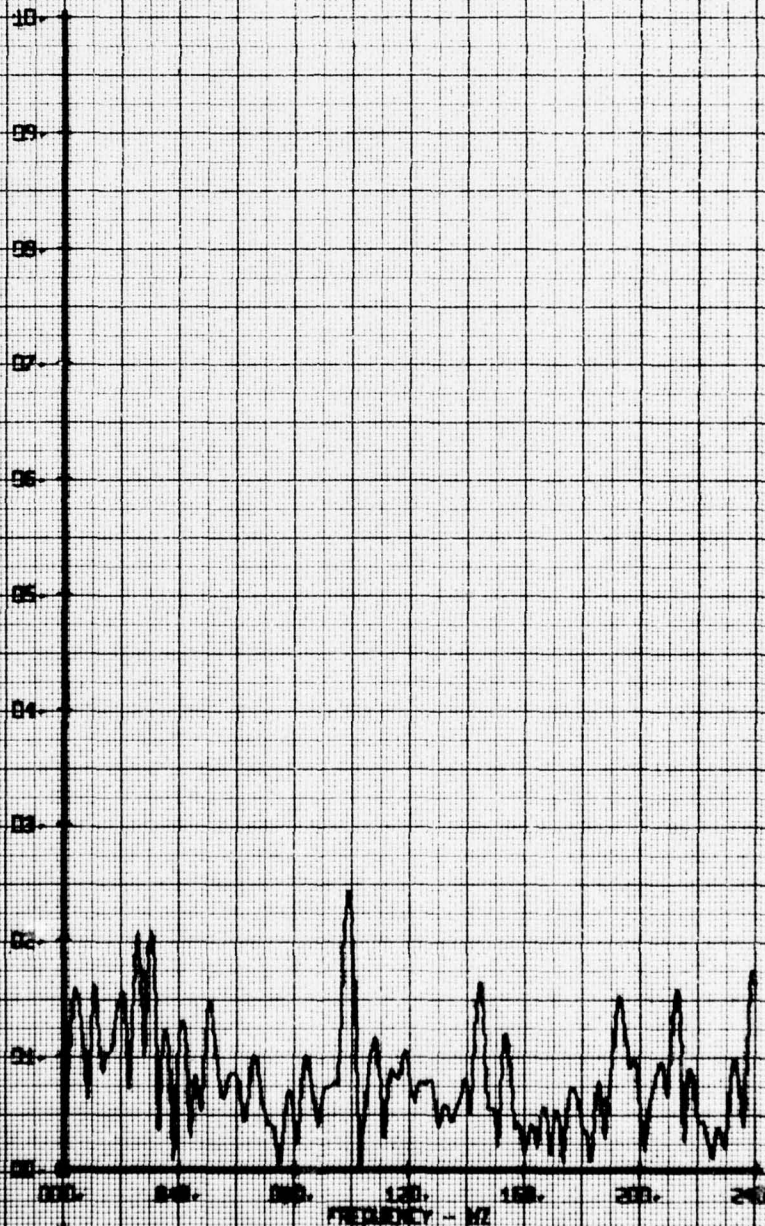
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40P51
RBN 173 TP 2

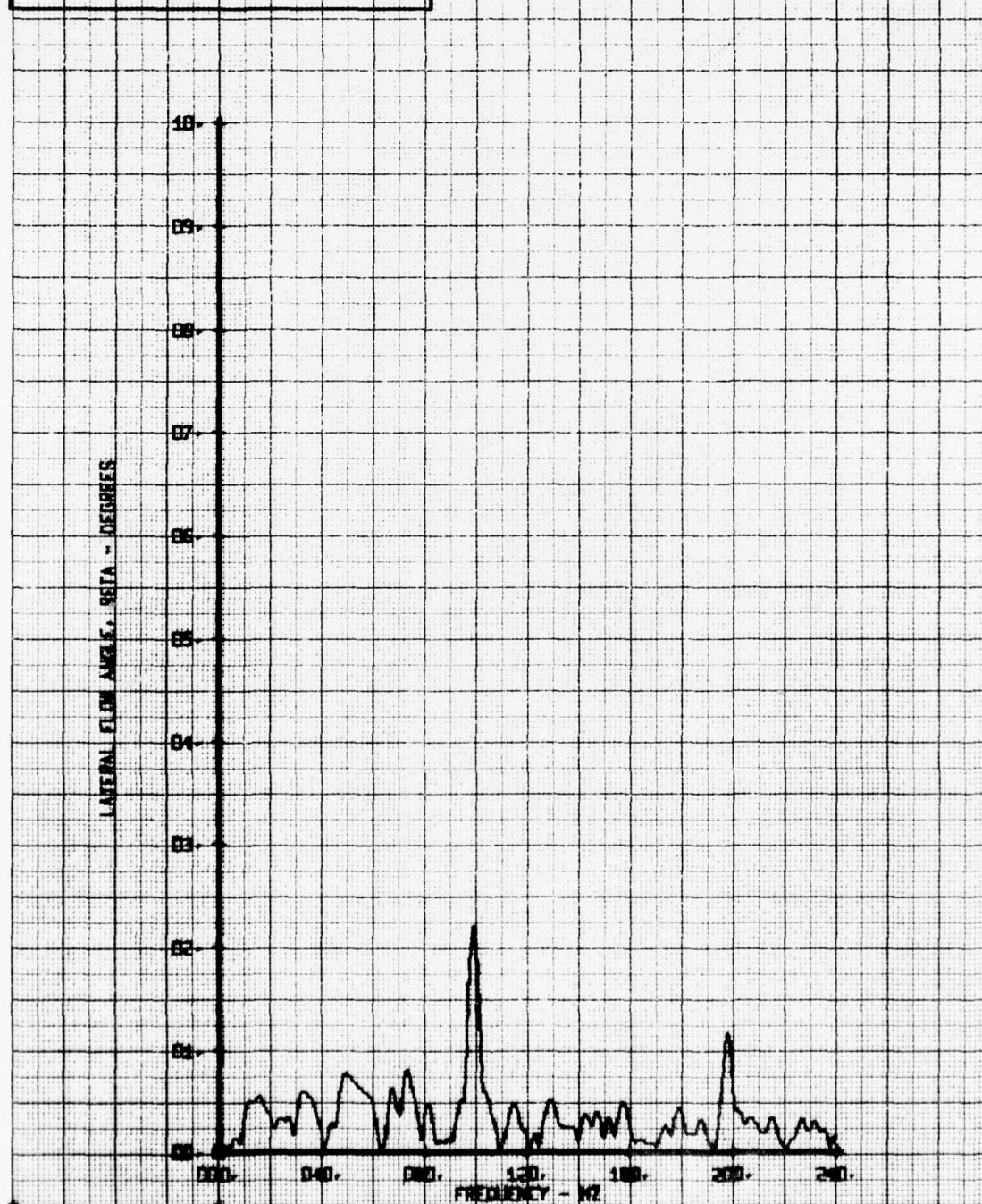
LEGEND
CH PARAMETER
BS BETA

LATERAL FLOW ANGLE: BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET BASIC SYS 40PSI
RUN 173 TP 3

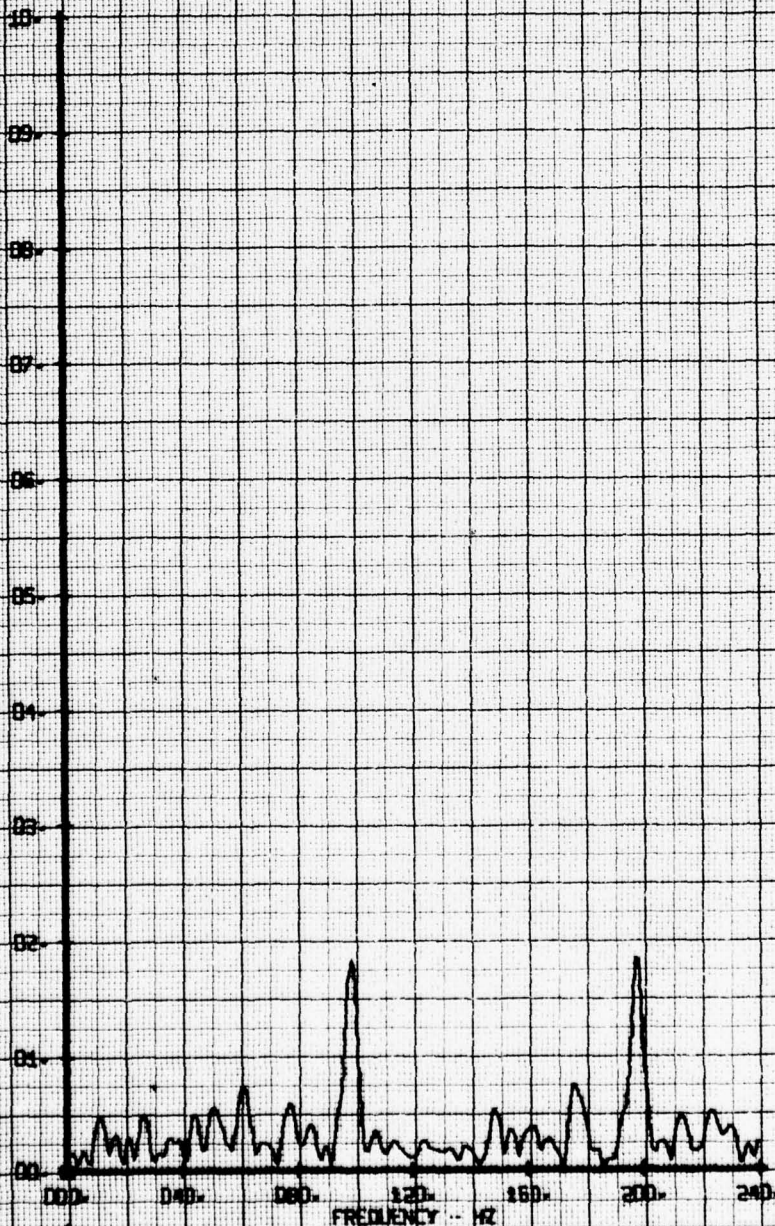
LEGEND
CH PARAMETER
BS BETA



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR CUCT BASIN SYS ADJUST
RUN 173 TP 4

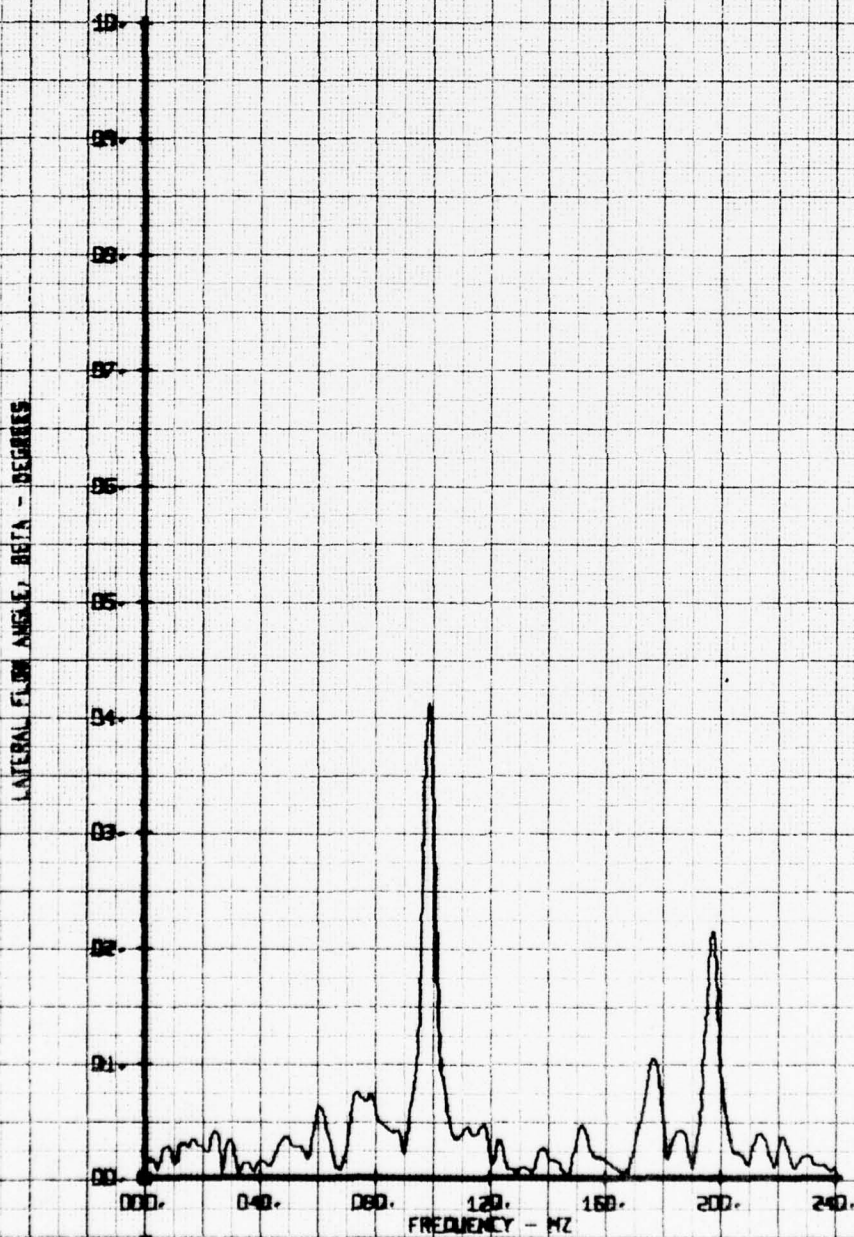
LEGEND
CH PARAMETER
BS BETA

LATERAL FLOW ANGLE: BETA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 40PSI
RUN 173 TP 5

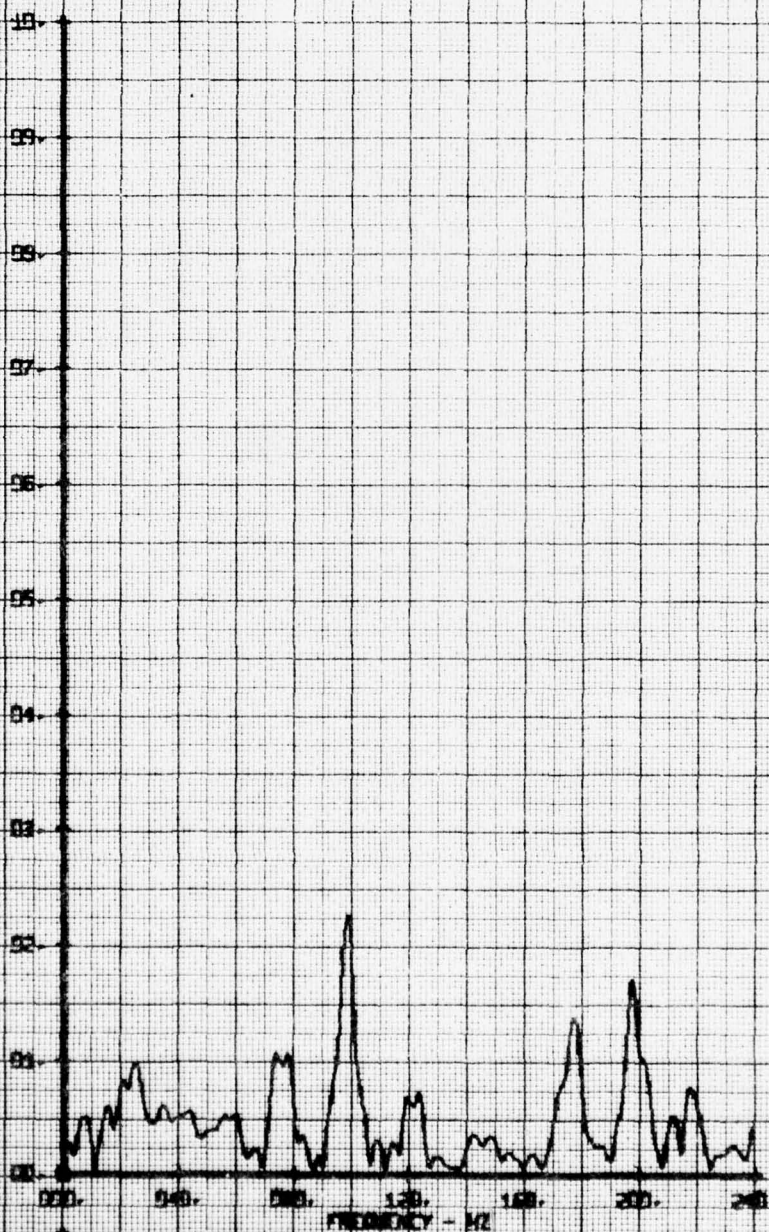
LEGEND
CH 65
PARAMETER
BETA



HOY FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40R51
RUN 173 TP 6

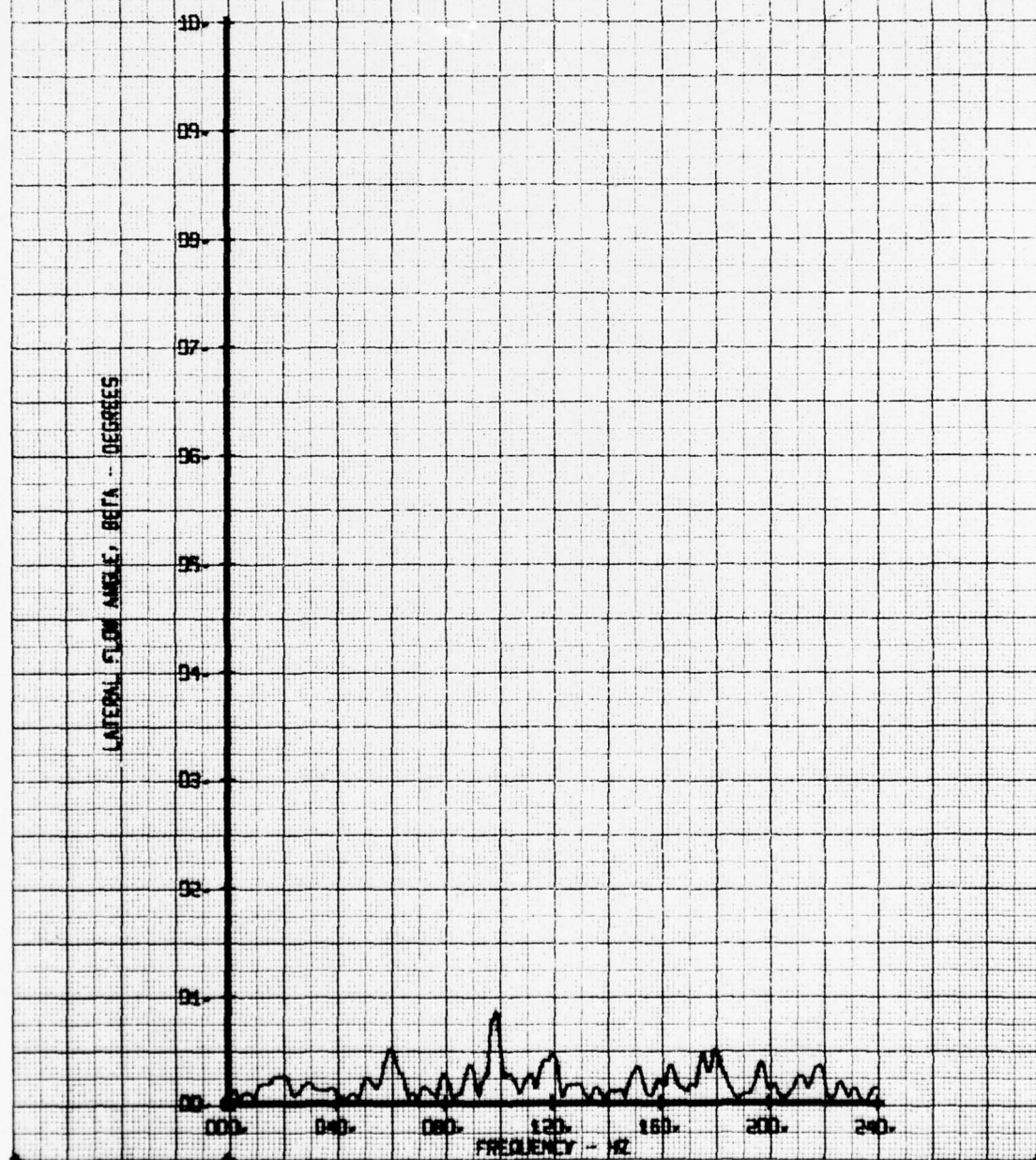
LEGEND
CH PARAMETER
BS BETA

LATERAL FLOW ANGLE: BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40FST
RUN 173 TP 7

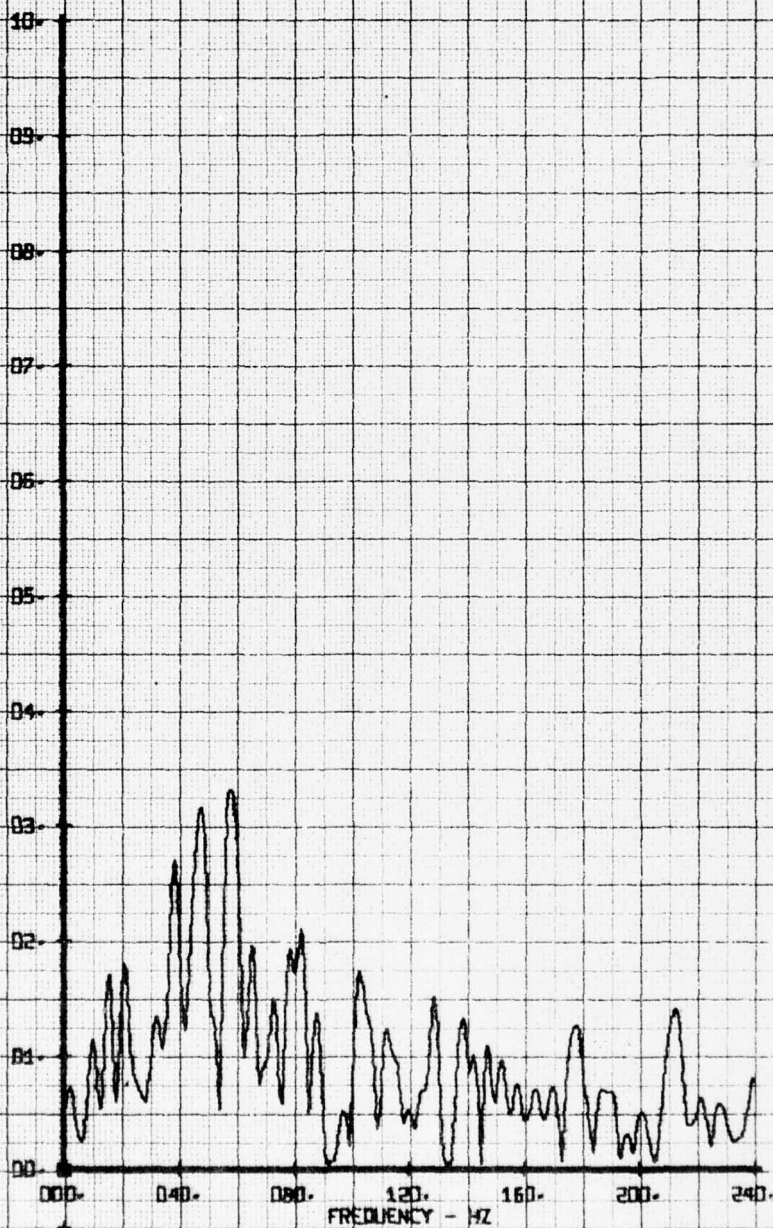
LEGEND
CH 65 PARAMETER
BETA



HOT FILM WIRE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PSI
RUN 173 TP 1

LEGEND
CH PARAMETER
S6 V-ALPHA

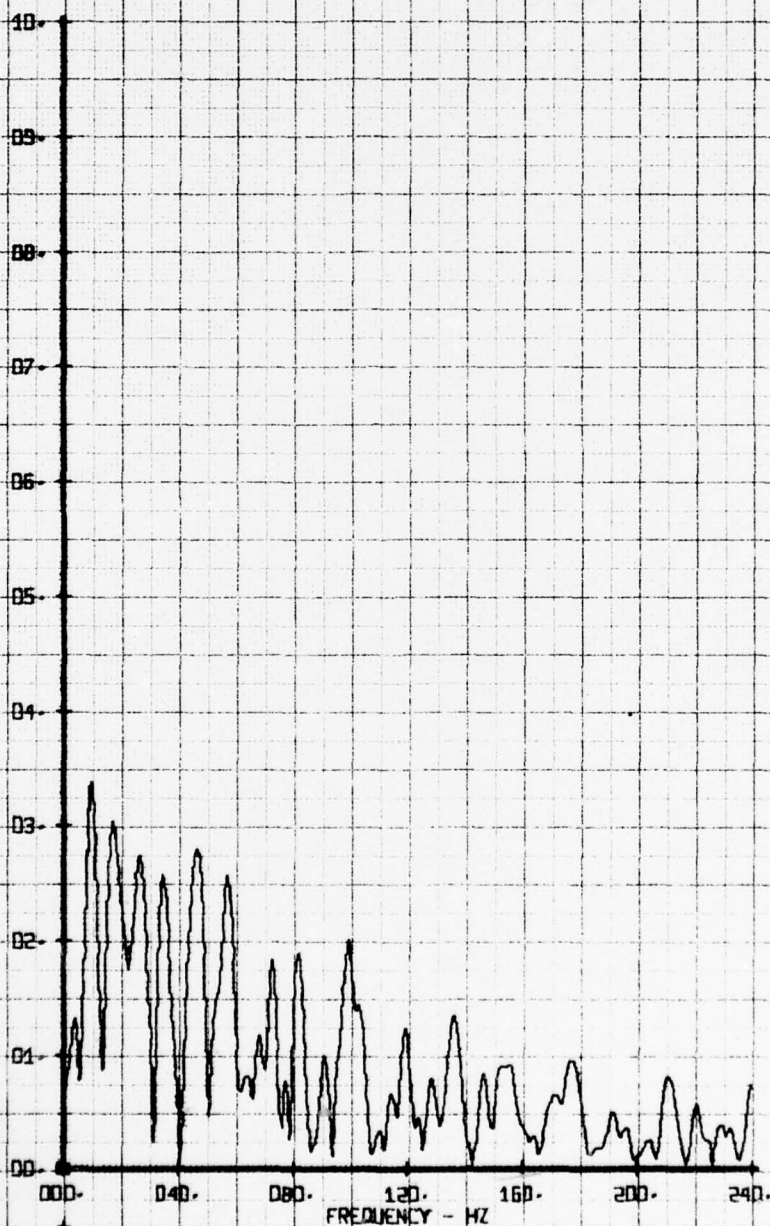
K-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40F5T
RUN 173 TP 2

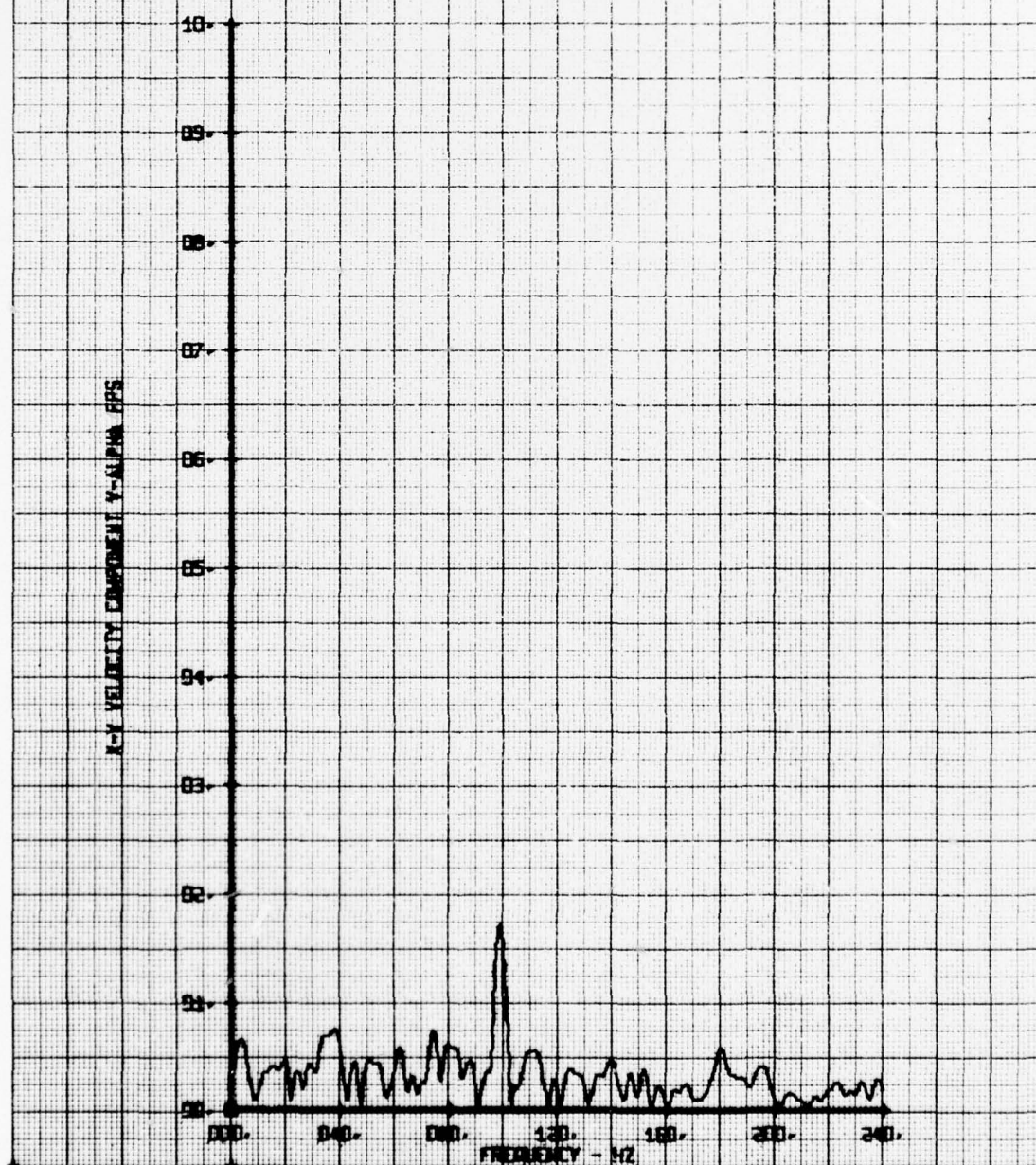
LEGEND
CH 66 PARAMETER
V-ALPHA

R-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40P51
RUN 173 TP 3

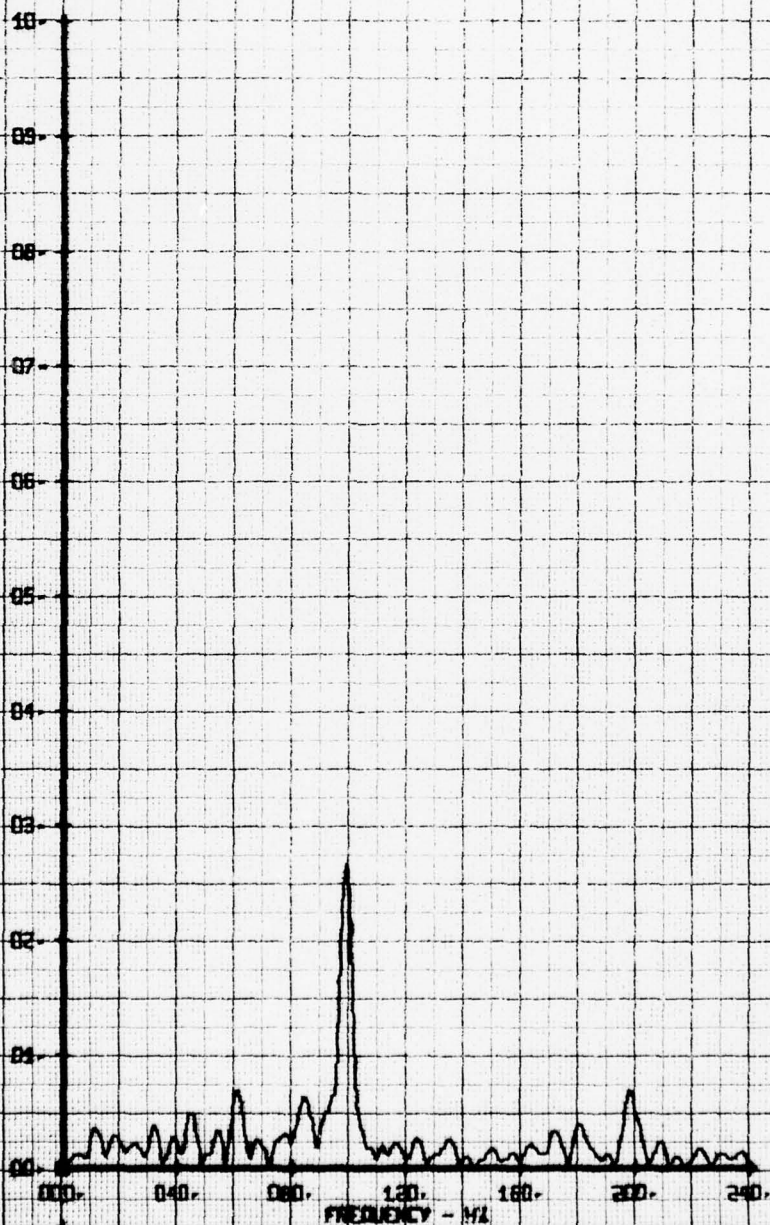
LEGEND
CH 66 PARAMETER
V-ALPHA



NOI FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PSI
RUN 173 TP 4

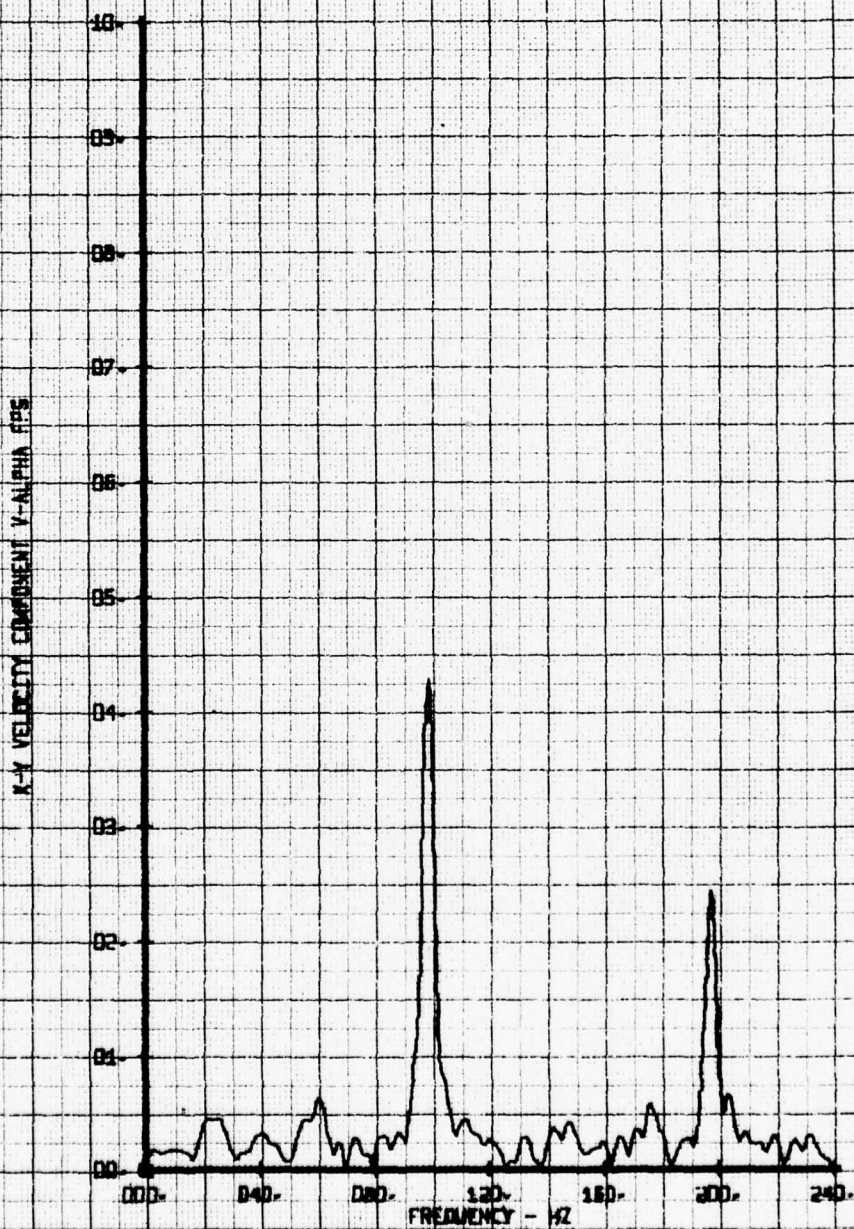
LEGEND
CH: PARAMETER
66: V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



NOT FILM WIRE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PST
RUN 173 TP 5

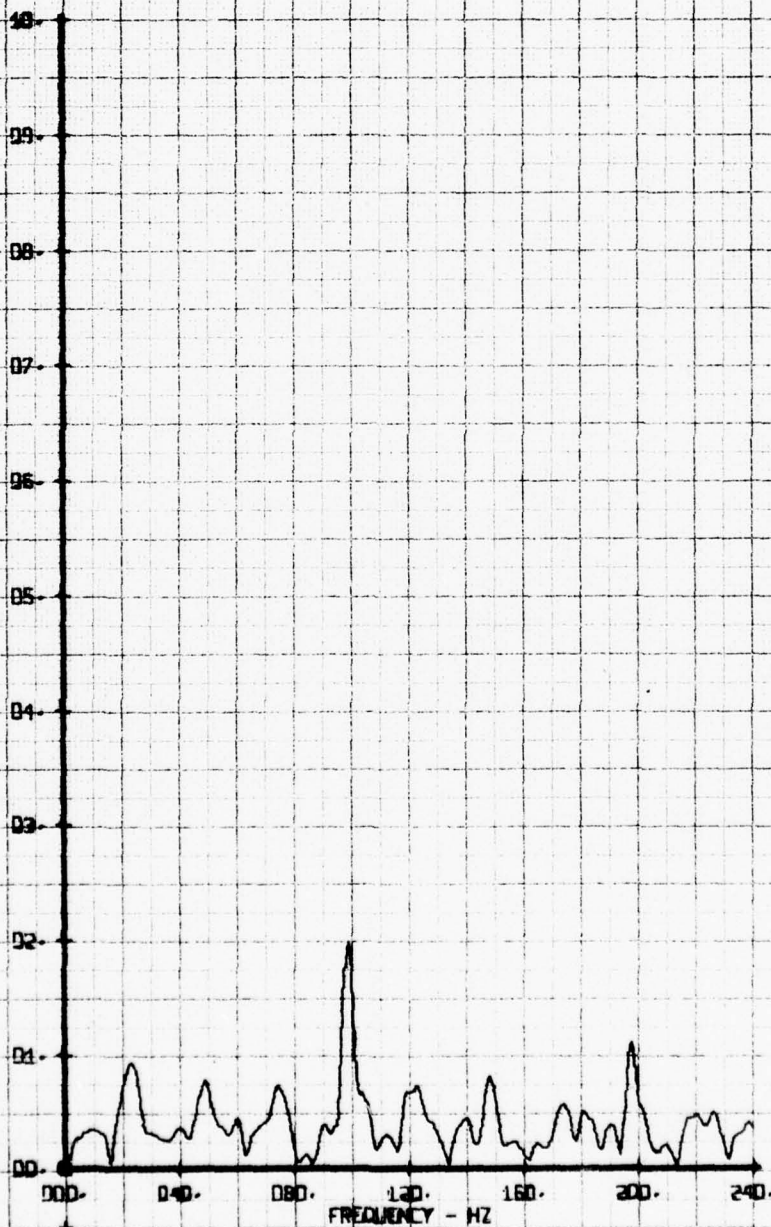
LEGEND
CH 86
PARAMETER
V-ALPHA



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40851
RUN 173 TP 6

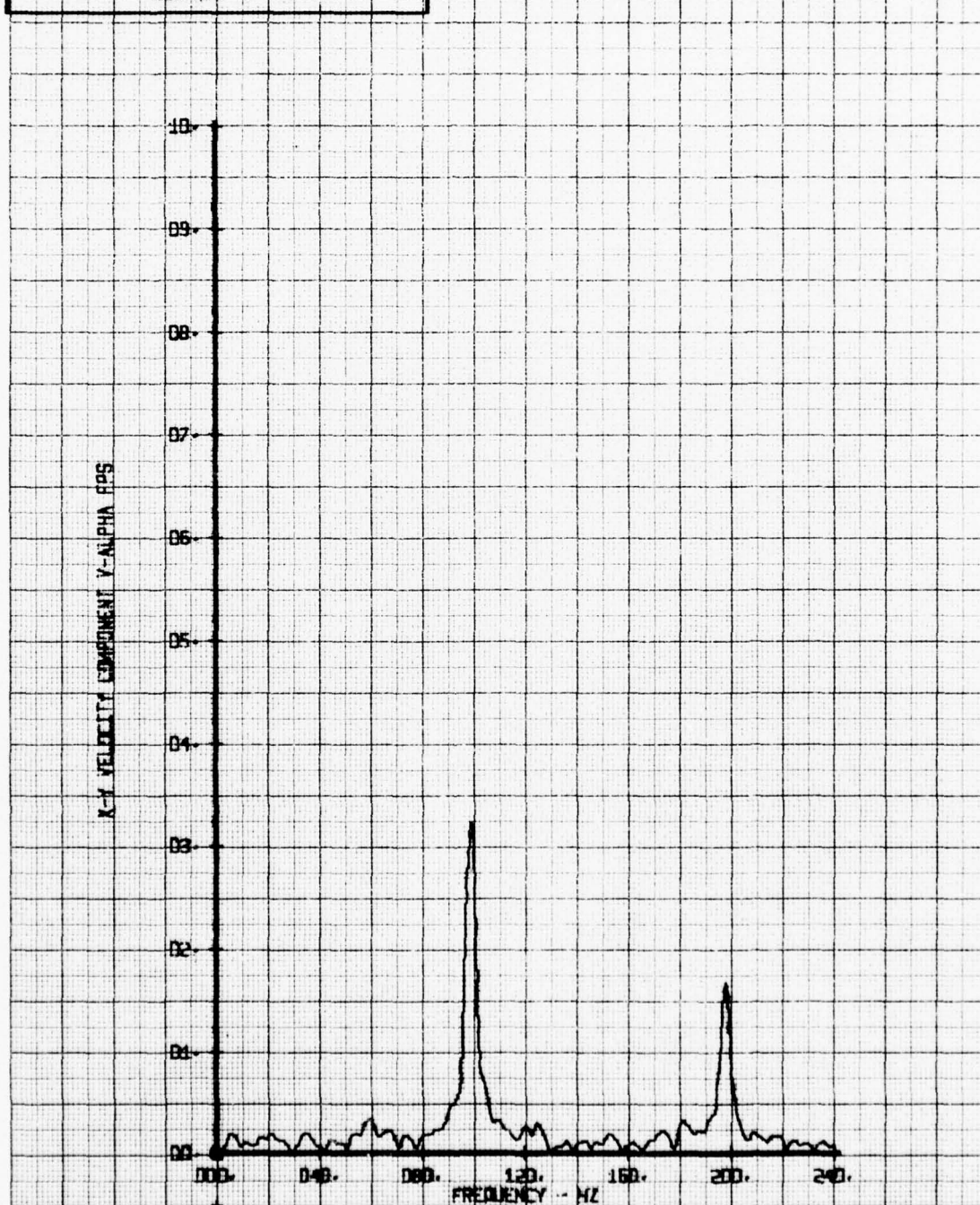
LEGEND
CH PARAMETER
GS V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



WOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40F51
RUN 173 TP 7

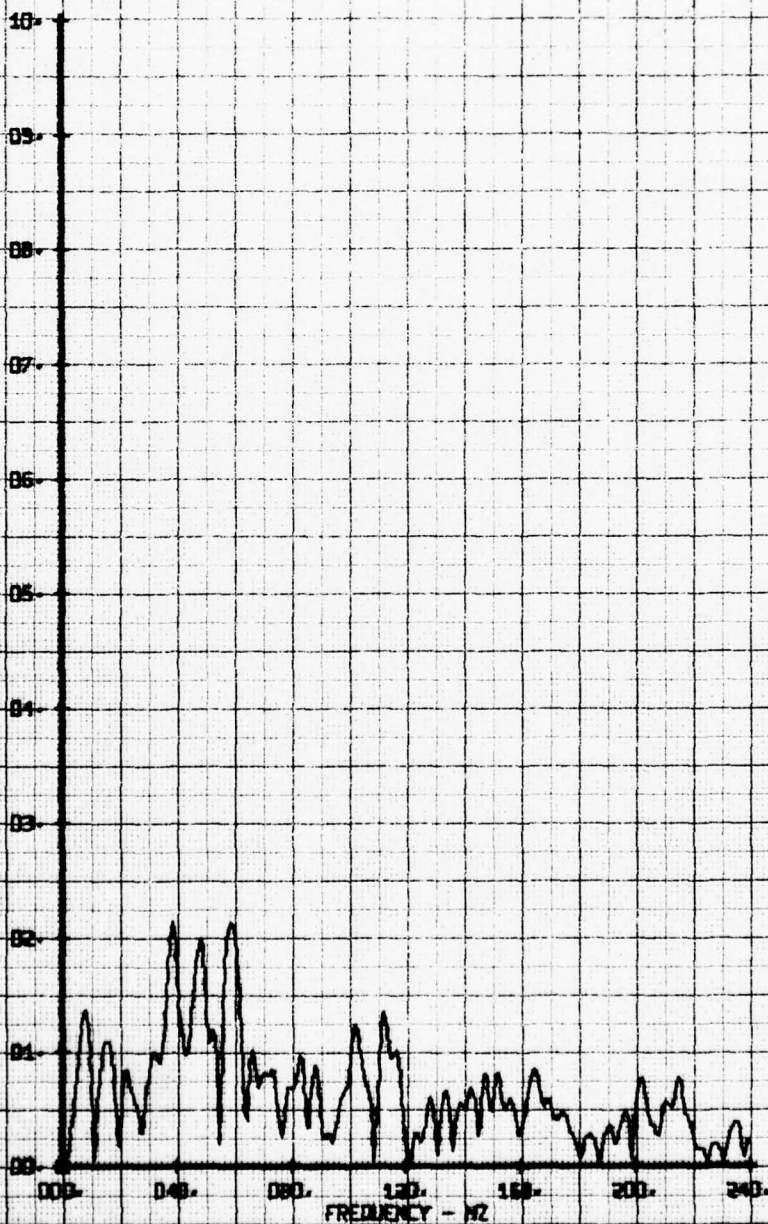
LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40PSI
RUN 173 TP 1

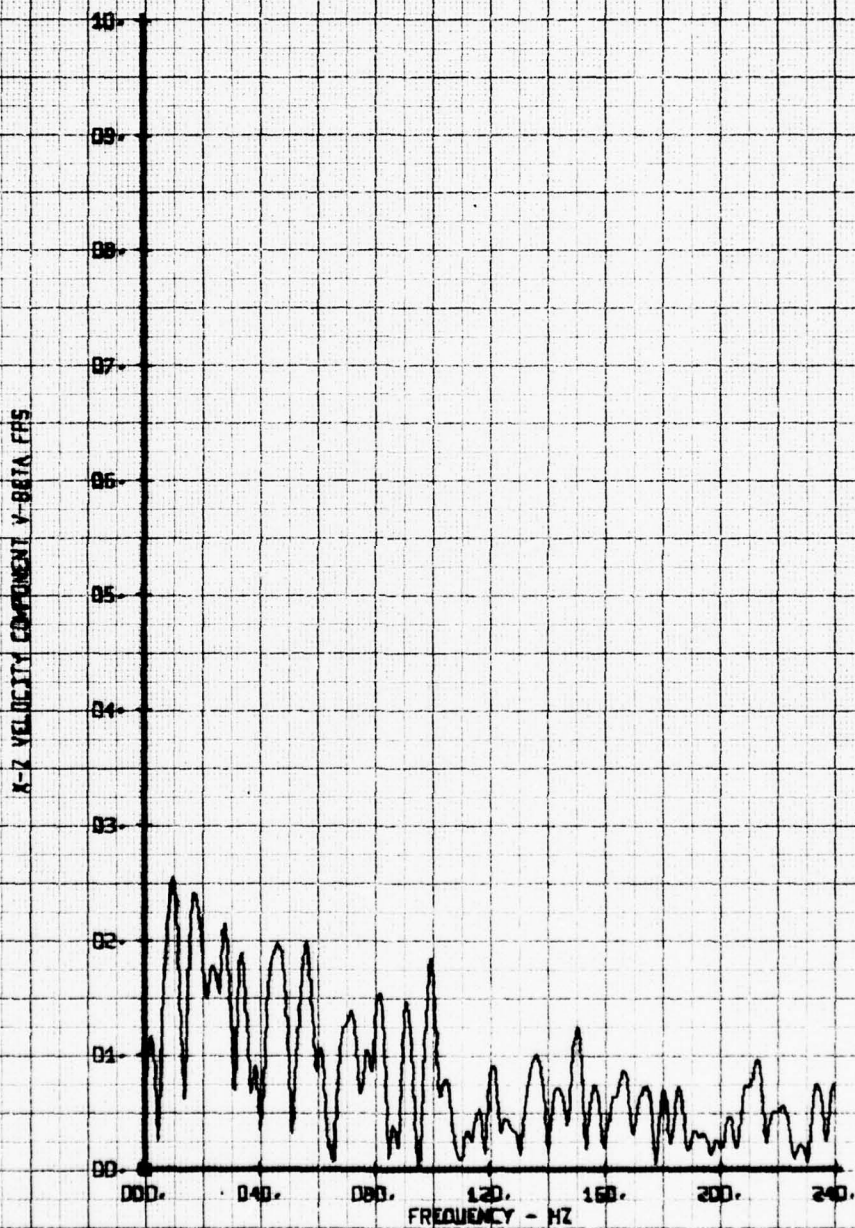
LEGEND
CH PARAMETER
65 V-BETA

X-2 VELOCITY COMPONENT V-BETA FFS



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIN SYS 40PSI
RUN 173 TP 2

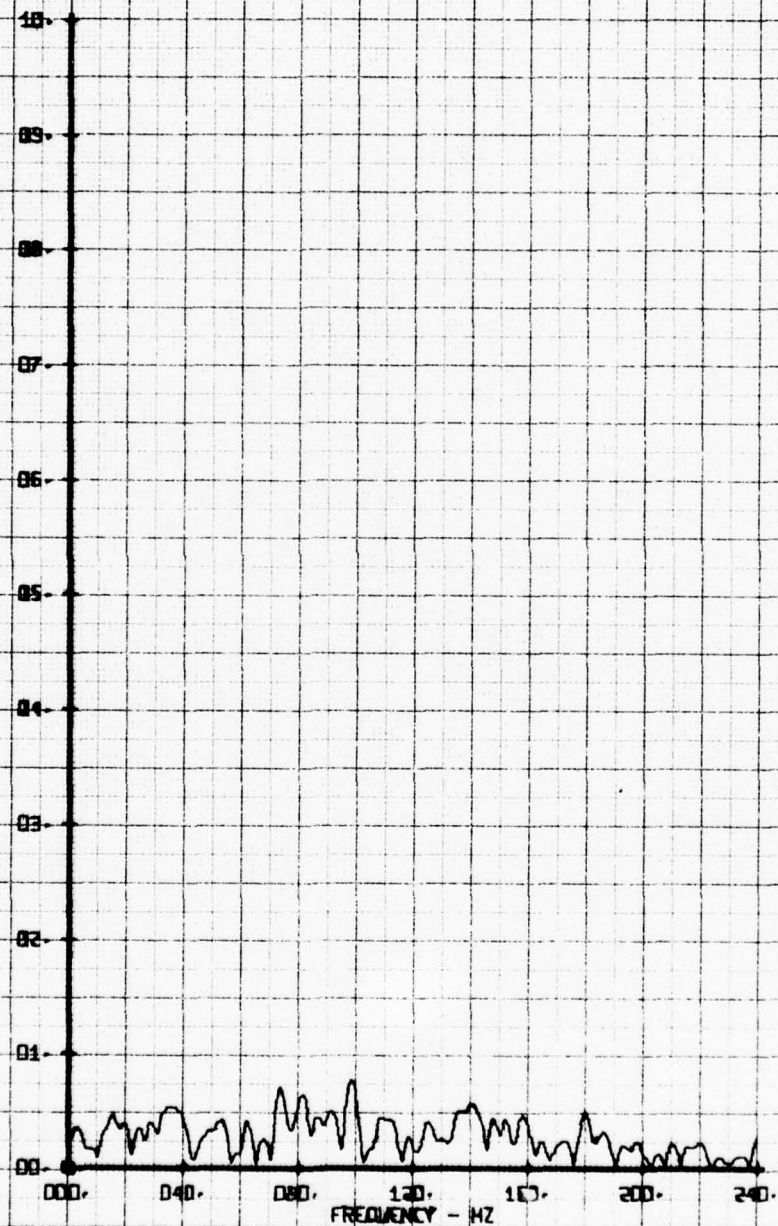
LEGEND
CH PARAMETER
65 Y-BETA



NOY FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 40851
RUN 173 TP 3

LEGEND
CH PARAMETER
65 Y-BETA

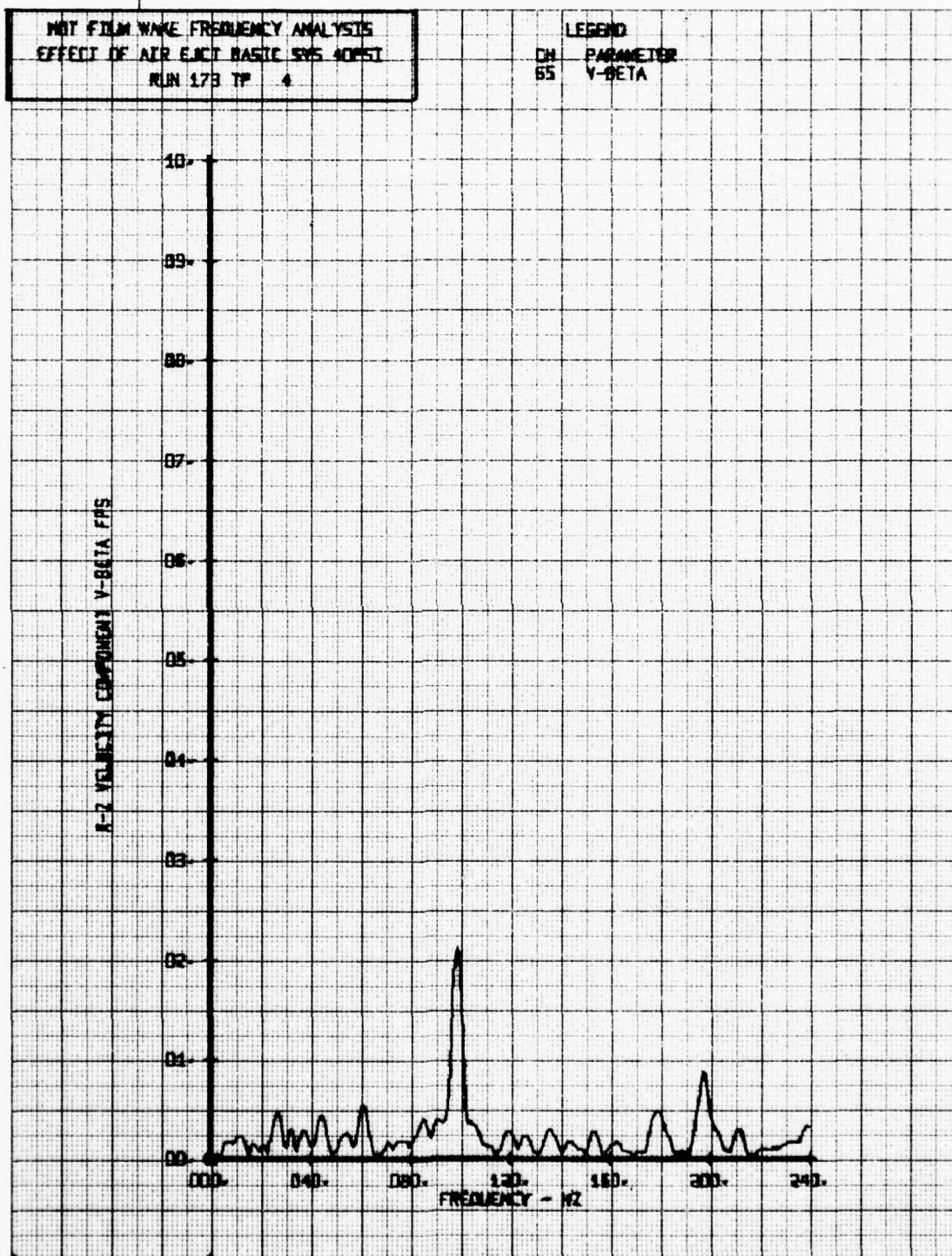
X-2 VELOCITY COMPONENT Y-BETA FHS



NOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR EJECT BASIS SYS 40PST
 RUN 173 TP 4

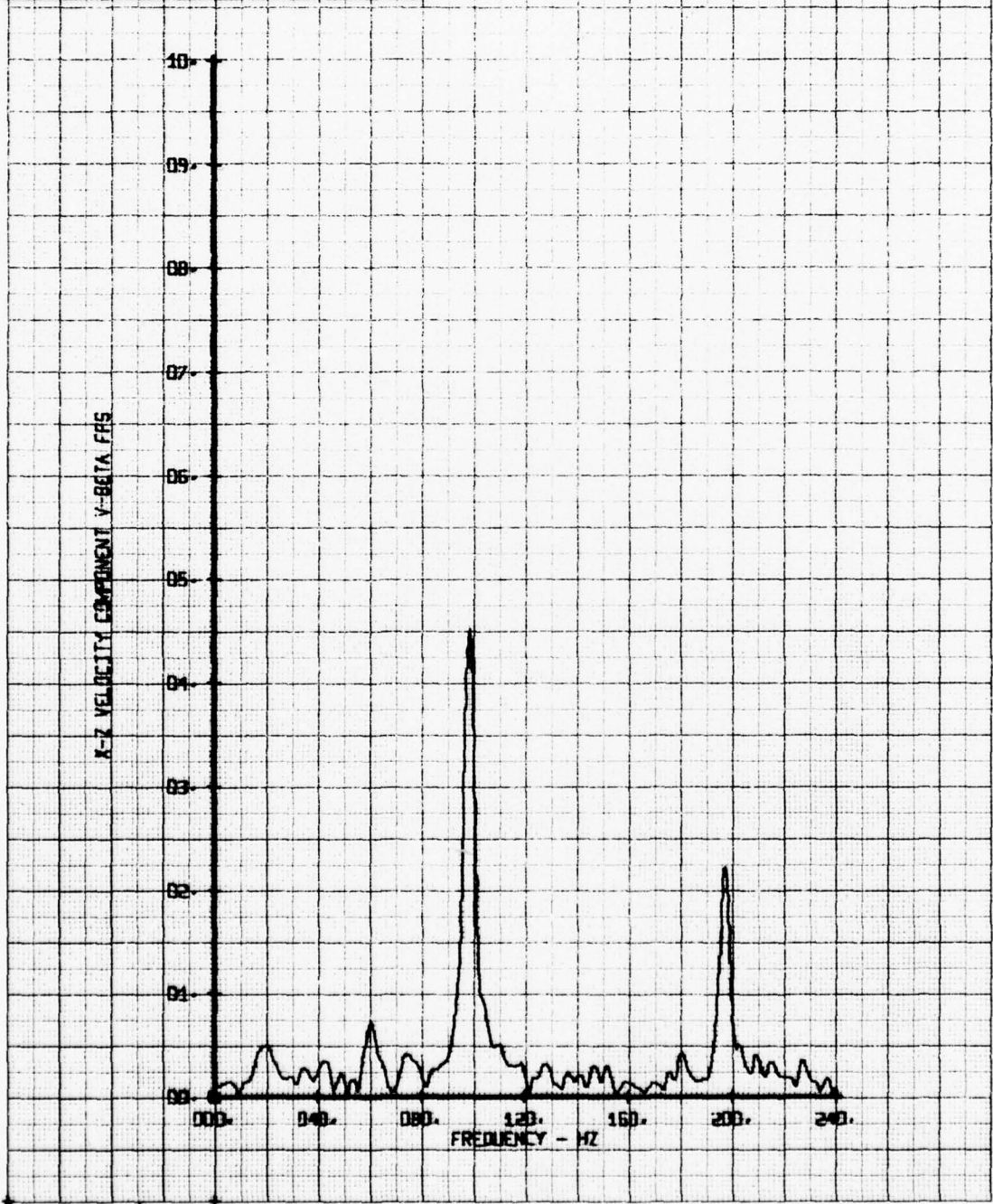
LEGEND

CH PARAMETER
 55 V-BETA



HOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR EJECT BASIC SYS 40PSI
 RUN 17B TP 5

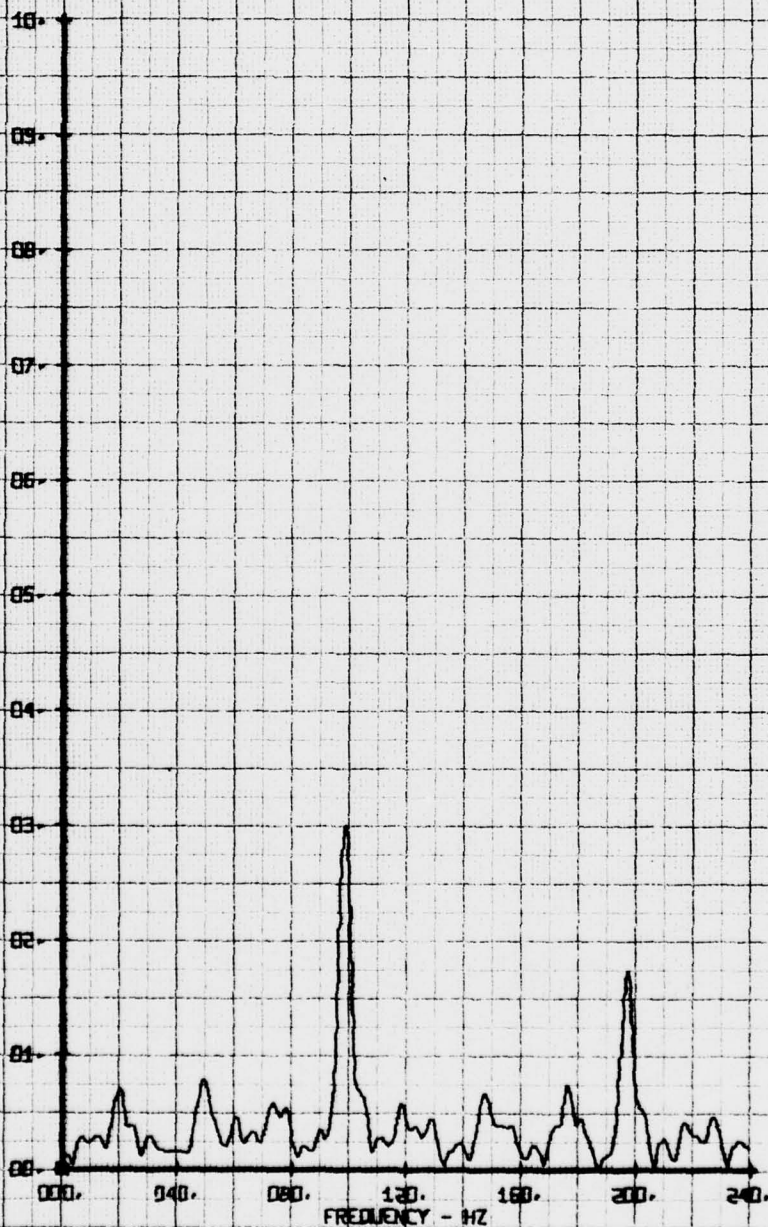
LEGEND
 CH PARAMETER
 65 V-BETA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET BASIC SYS 40PSI
RUN 173 TP 6

LEGEND
CH PARAMETER
65 V-BETA

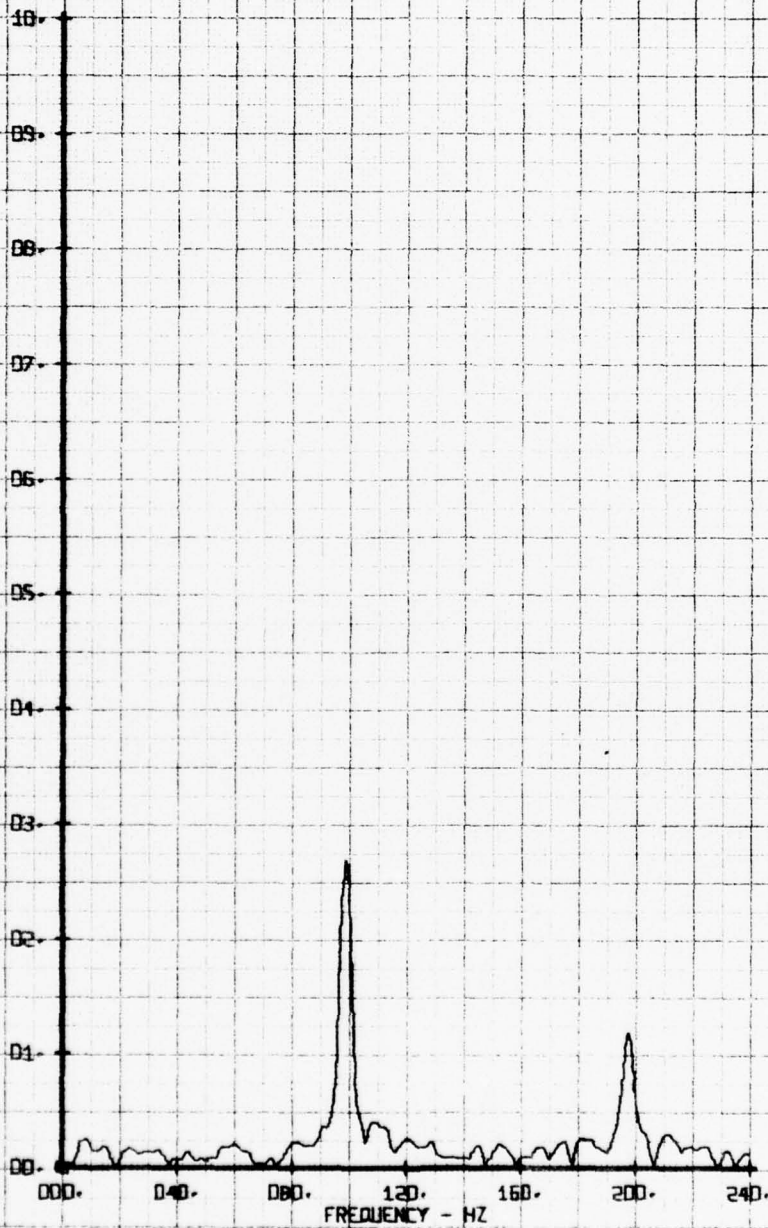
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 40R51
RUN 173 TP 7

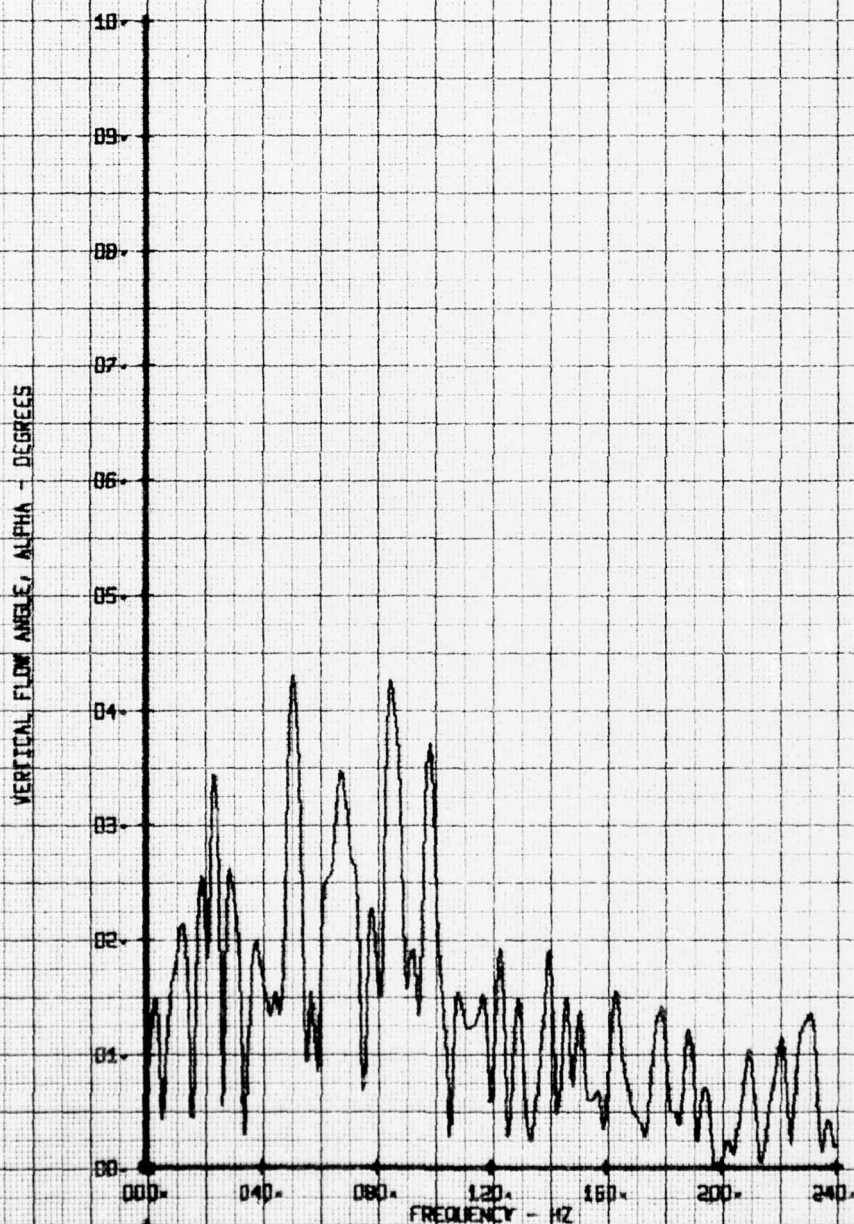
LEGEND
CH 65
PARAMETER
Y-BETA

X-2 VELOCITY COMPONENT Y-BETA FBS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 150PSI
RUN 174 TP 1

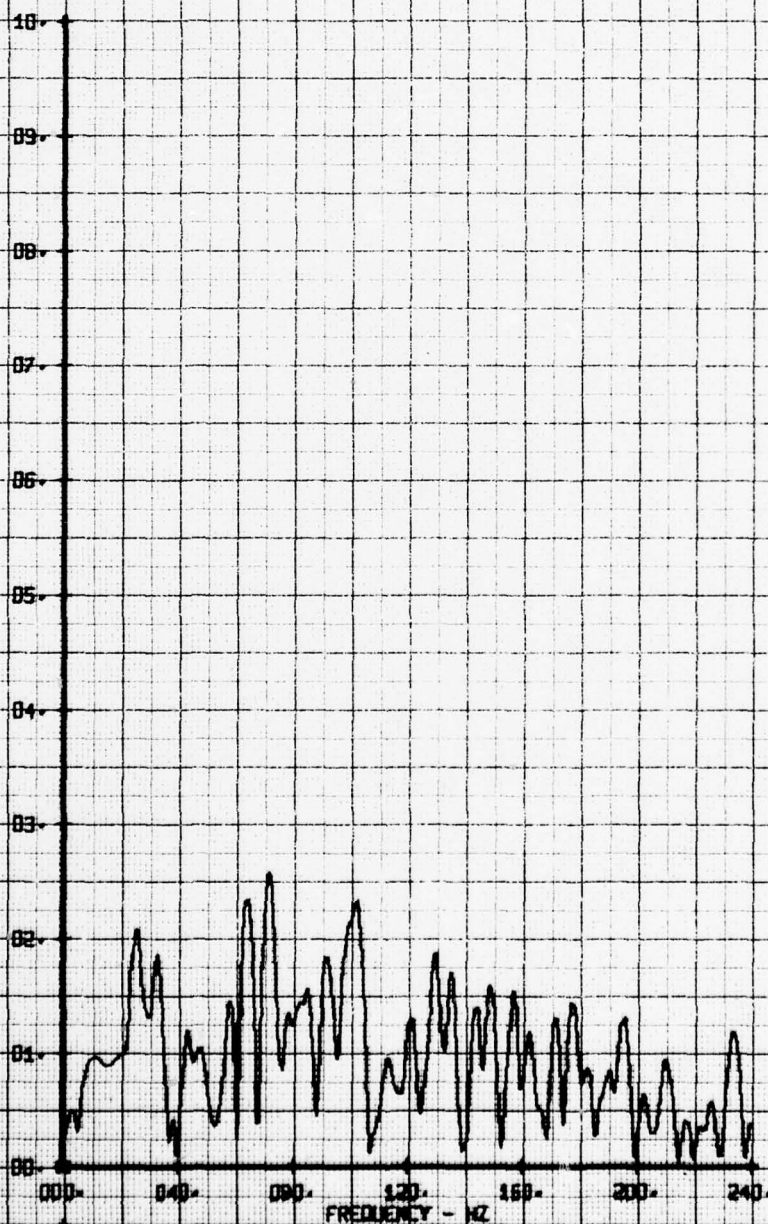
LEGEND
CH 56 PARAMETER
ALPHA



NOI FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 150PSI
RUN 174 TP 2

LEGEND
CH PARAMETER
66 ALPHA

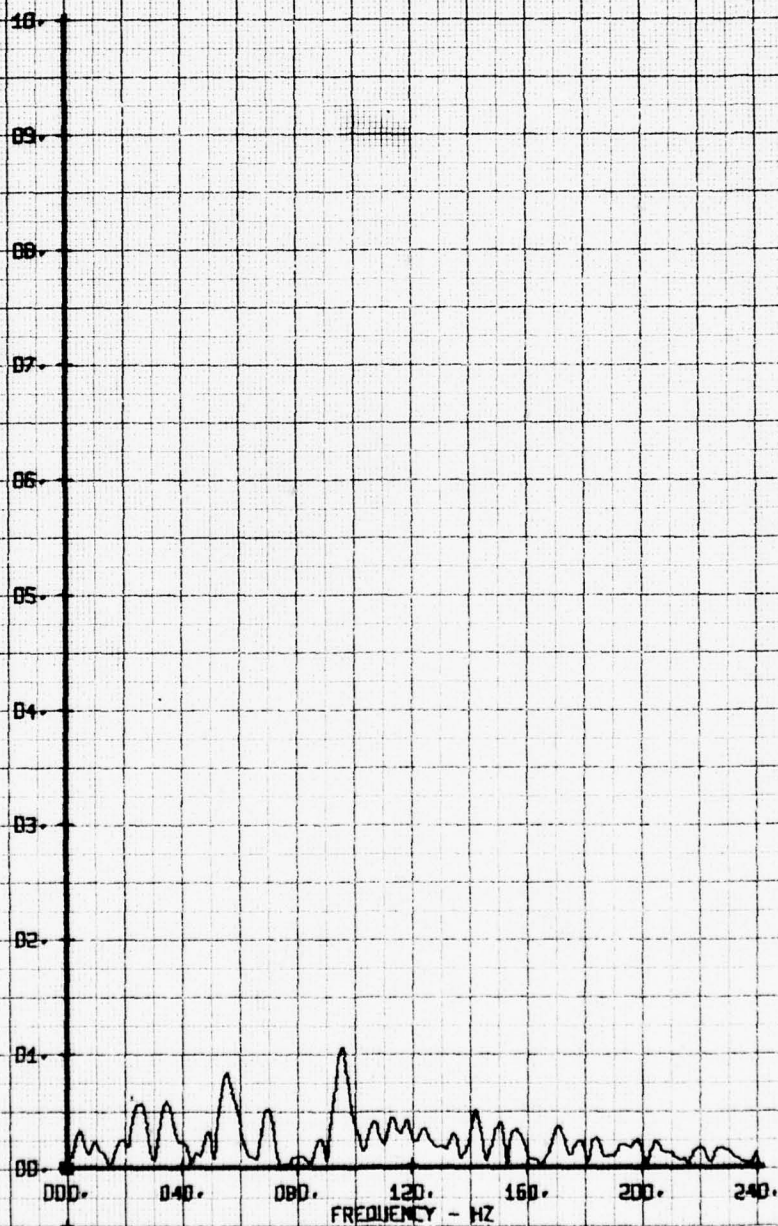
VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET BASIC SYS 150PST
RIN 174 TP 3

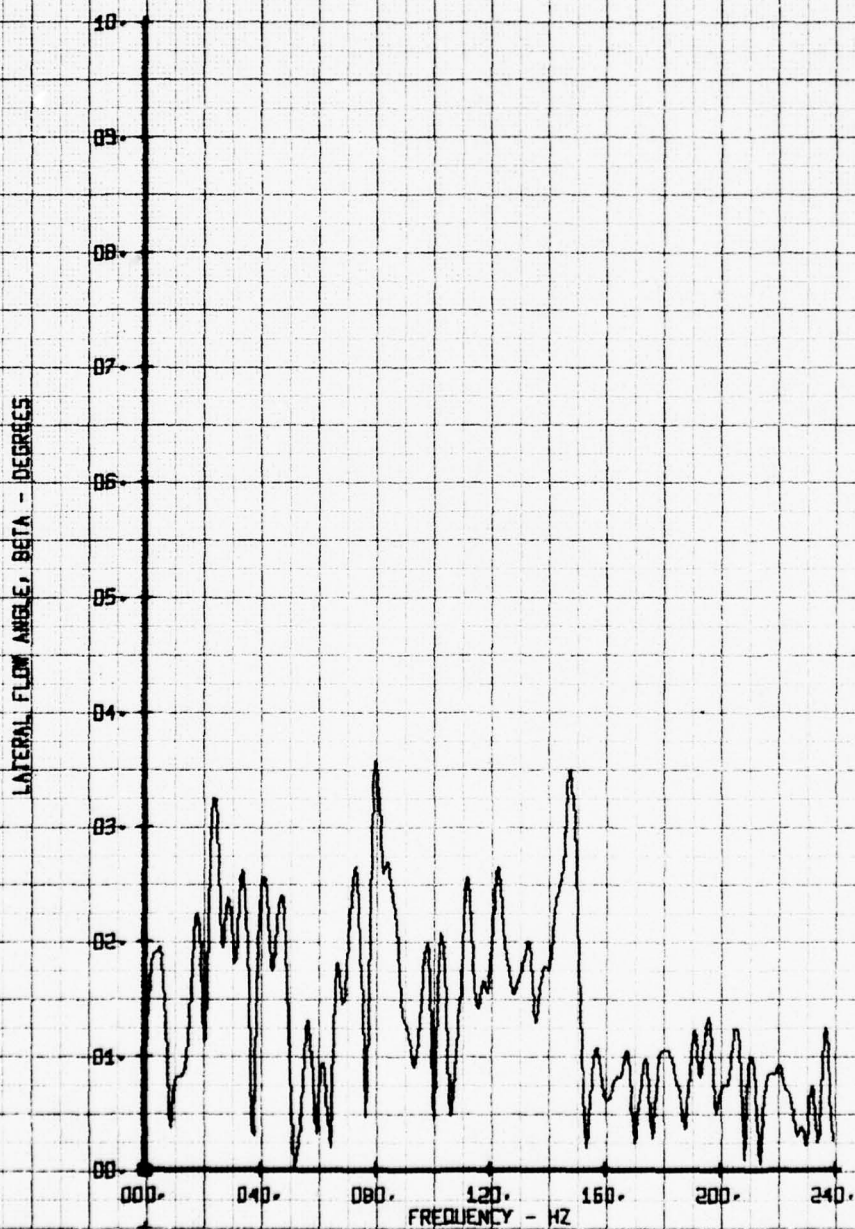
LEGEND
EN 66
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



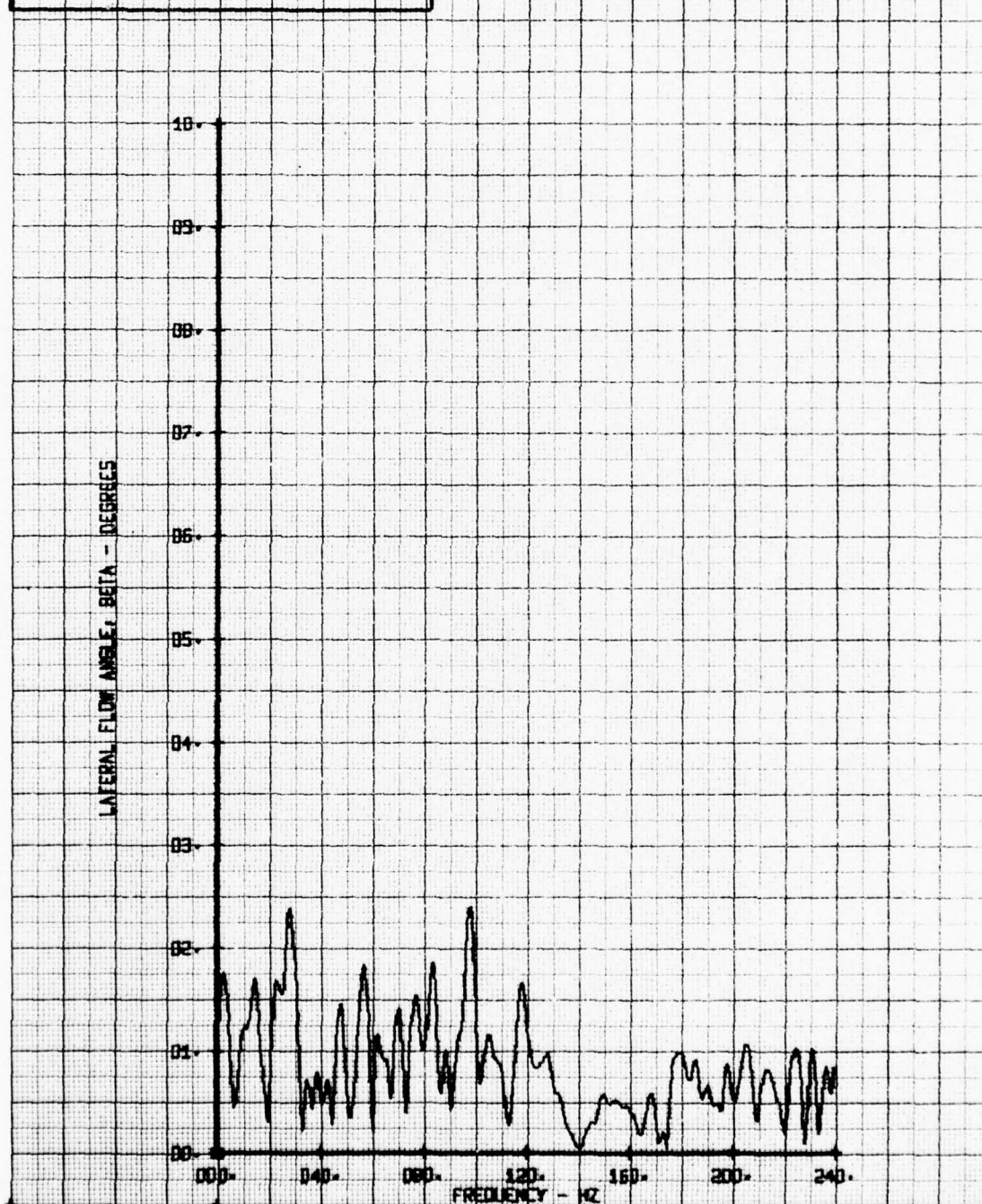
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 150PSI
RUN 174 TP 1

LEGEND
CH 65
PARAMETER
BETA



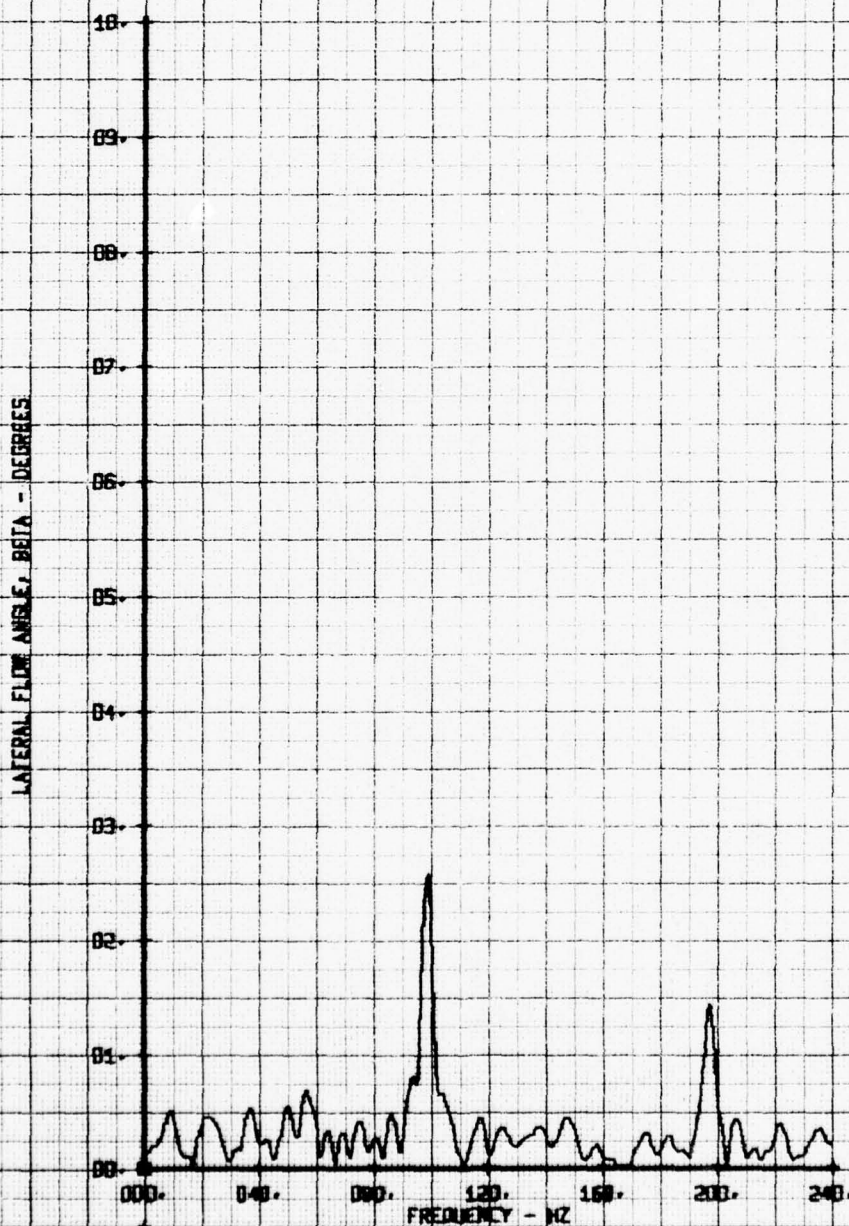
NOY FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 150RST
RUN 174 TP 2

LEGEND
CH PARAMETER
BS BETA



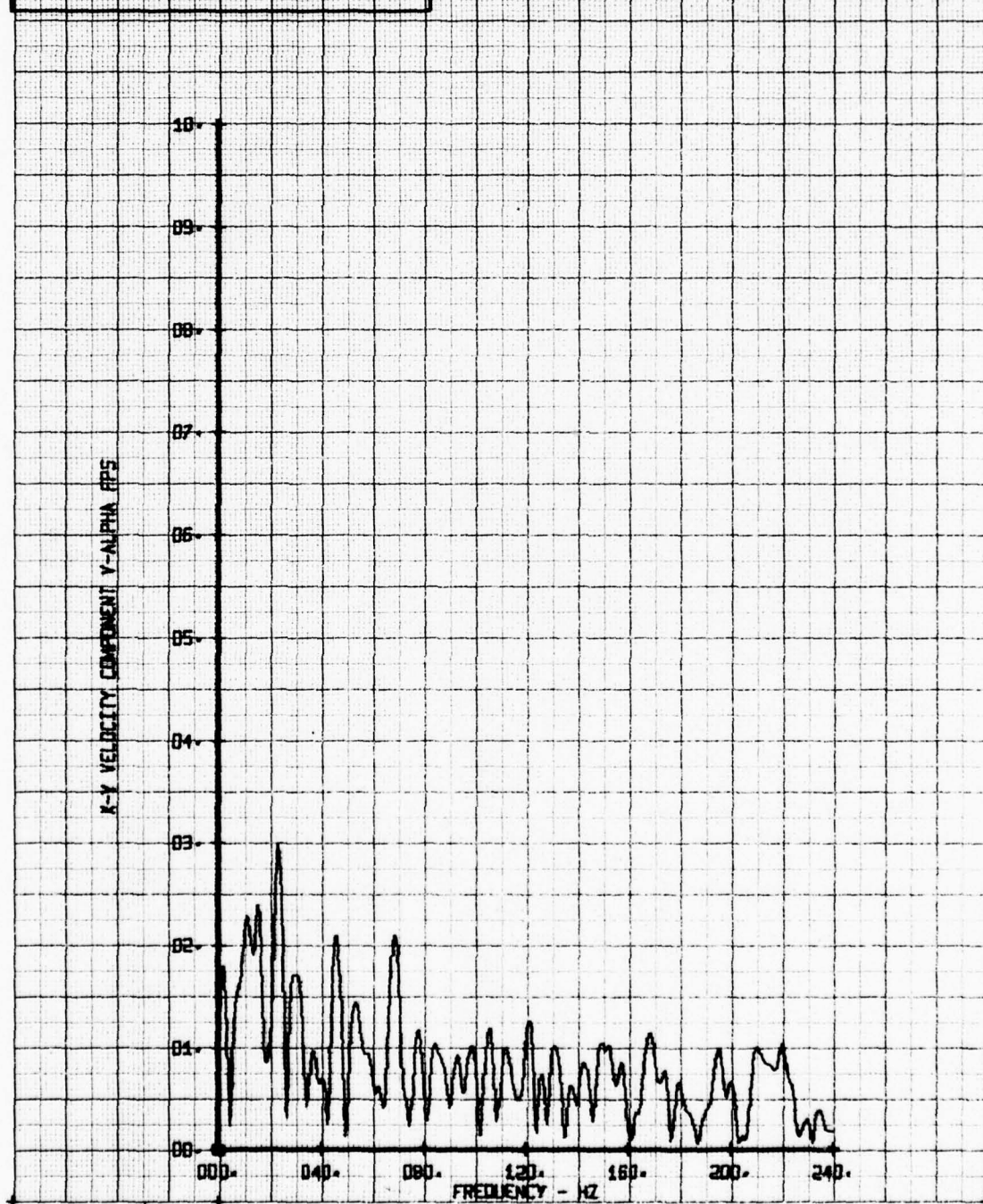
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 150FST
RUN 174 TP 3

LEGEND
CH 65
PARAMETER
BETA



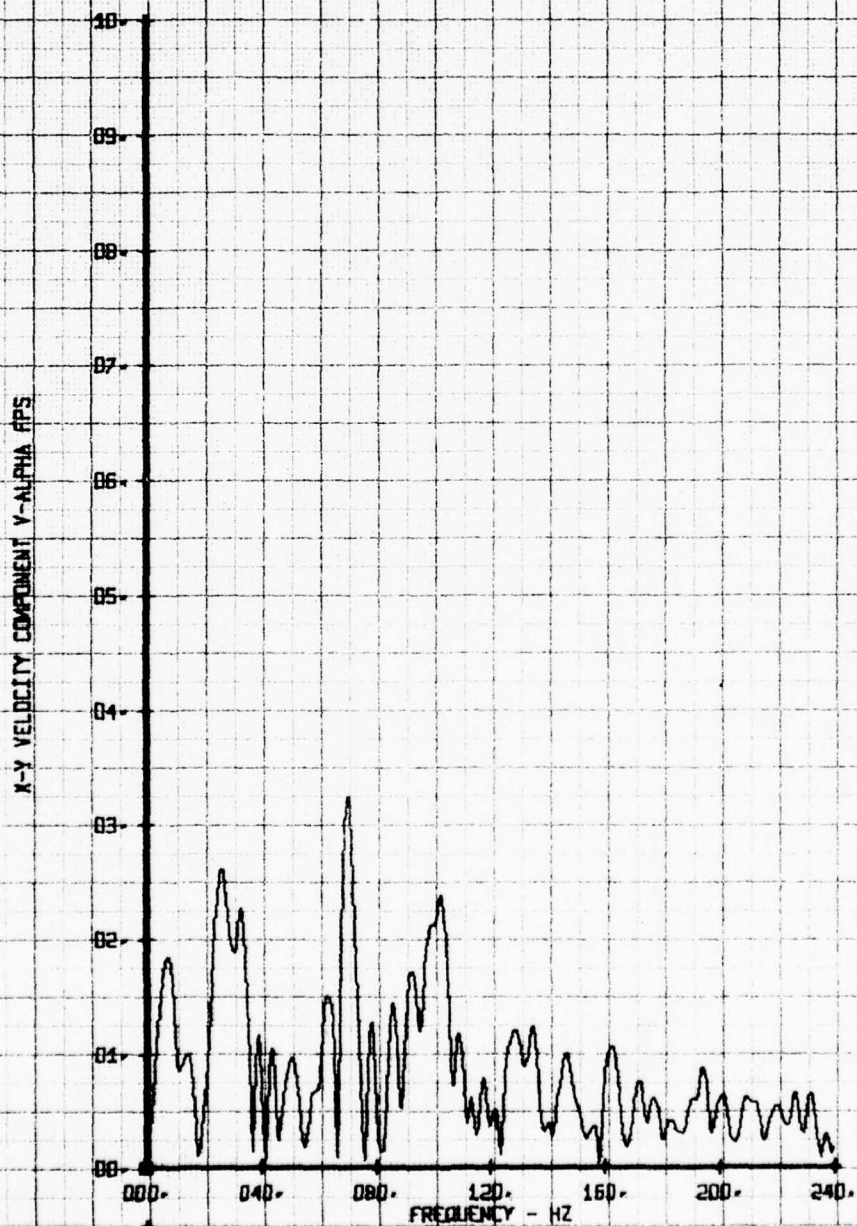
NOI FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW RATE SYS 150PSY
RUN 174 TP 1

LEGEND
CH PARAMETER
55 Y-ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 150FST
RUN 174 TP 2

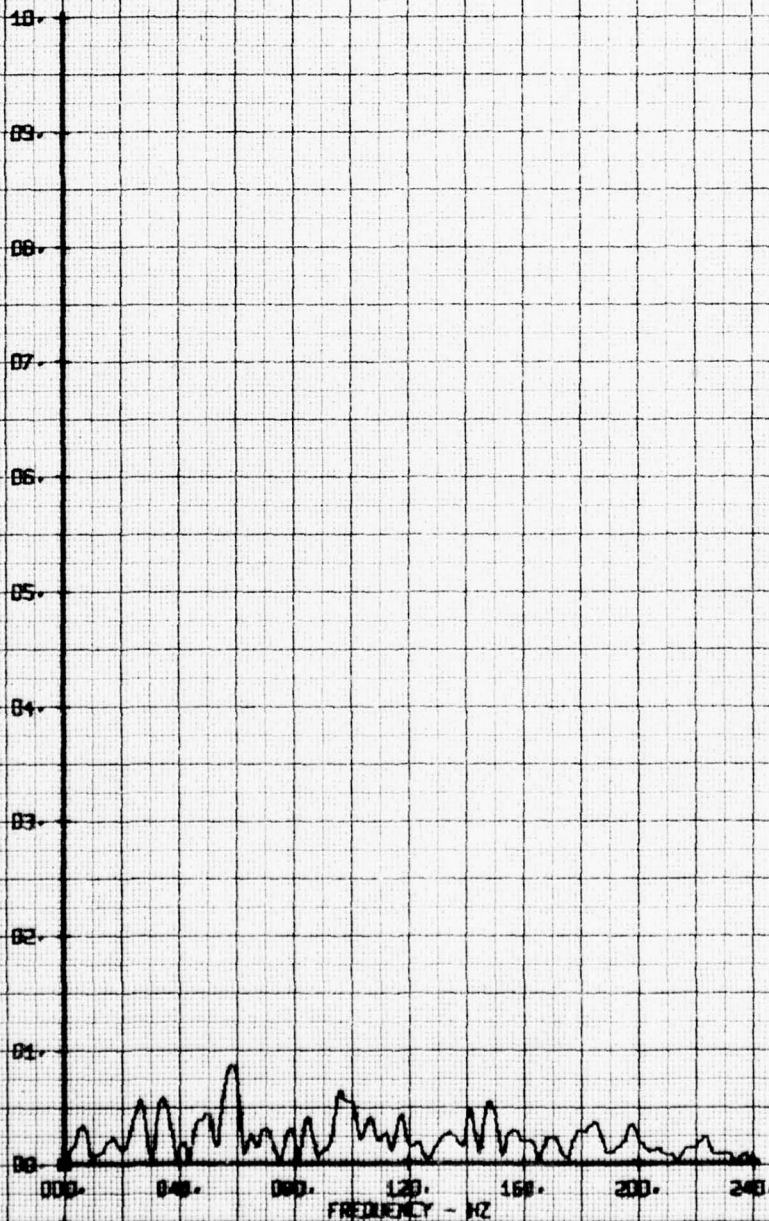
LEGEND
CH PARAMETER
66 V-ALPHA



NOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 150PST
RUN 174 TP. 3

LEGEND
CH PARAMETER
66 V-ALPHA

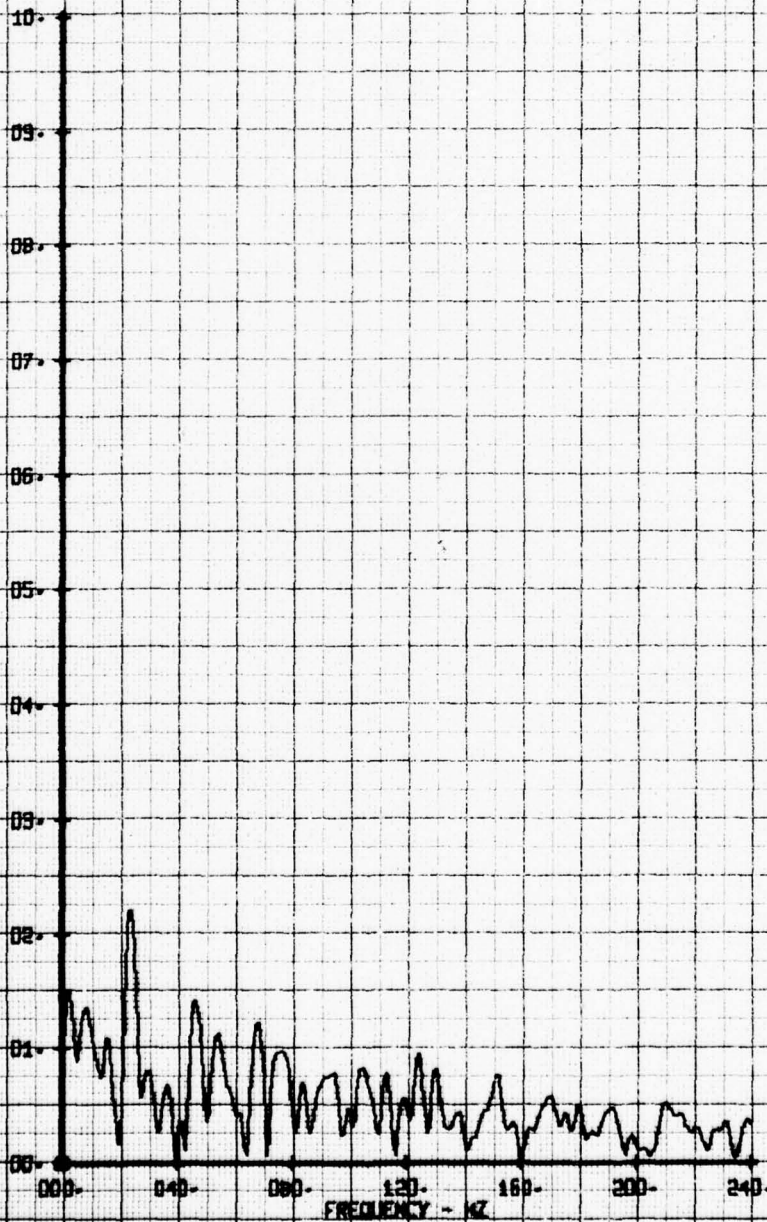
X-Y VELOCITY COMPONENT V-ALPHA EPS

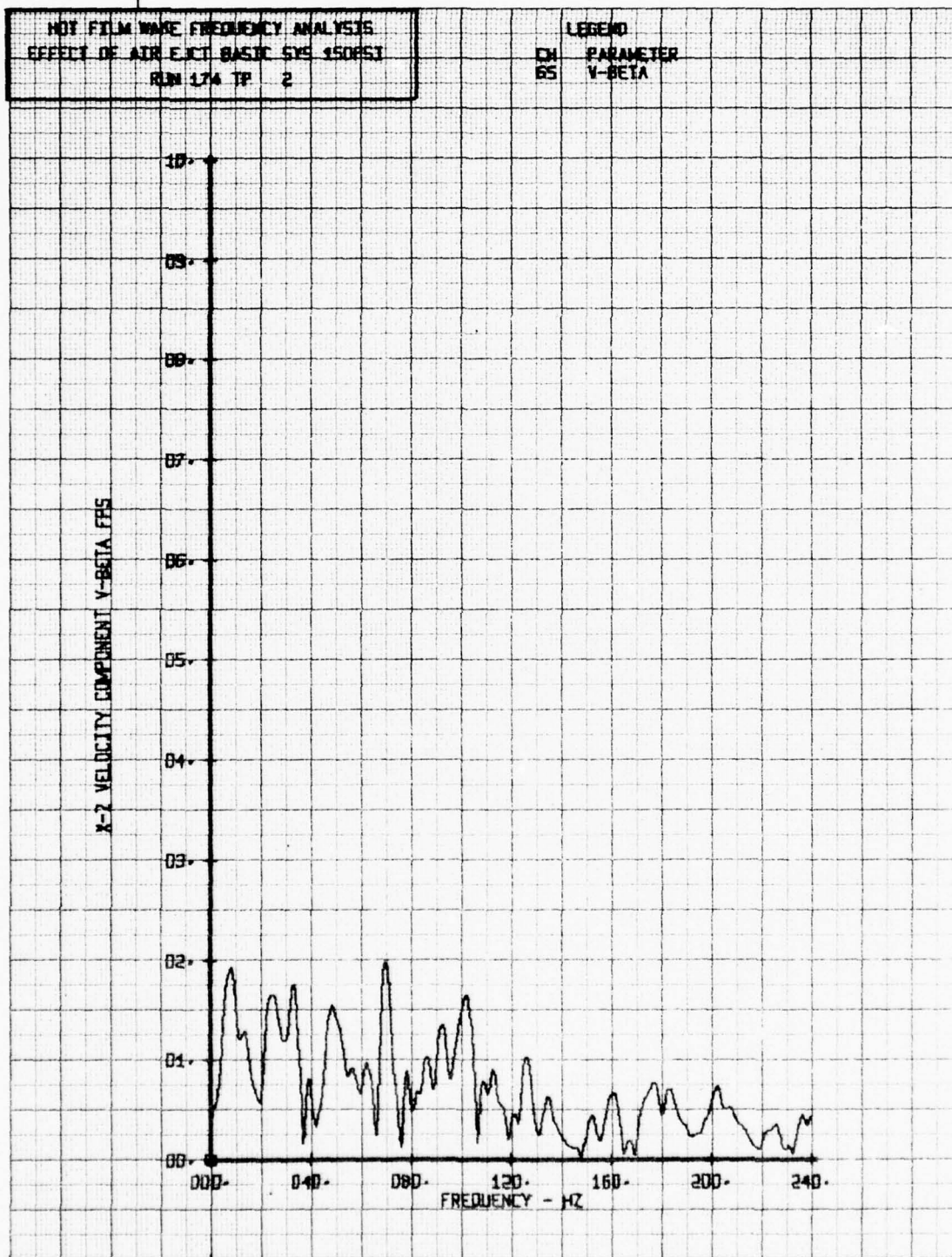


HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT BASIC SYS 150PSI
RUN 174 TP 1

LEGEND
CH PARAMETER
65 Y-BETA

X-2 VELOCITY COMPONENT Y-BETA FPS



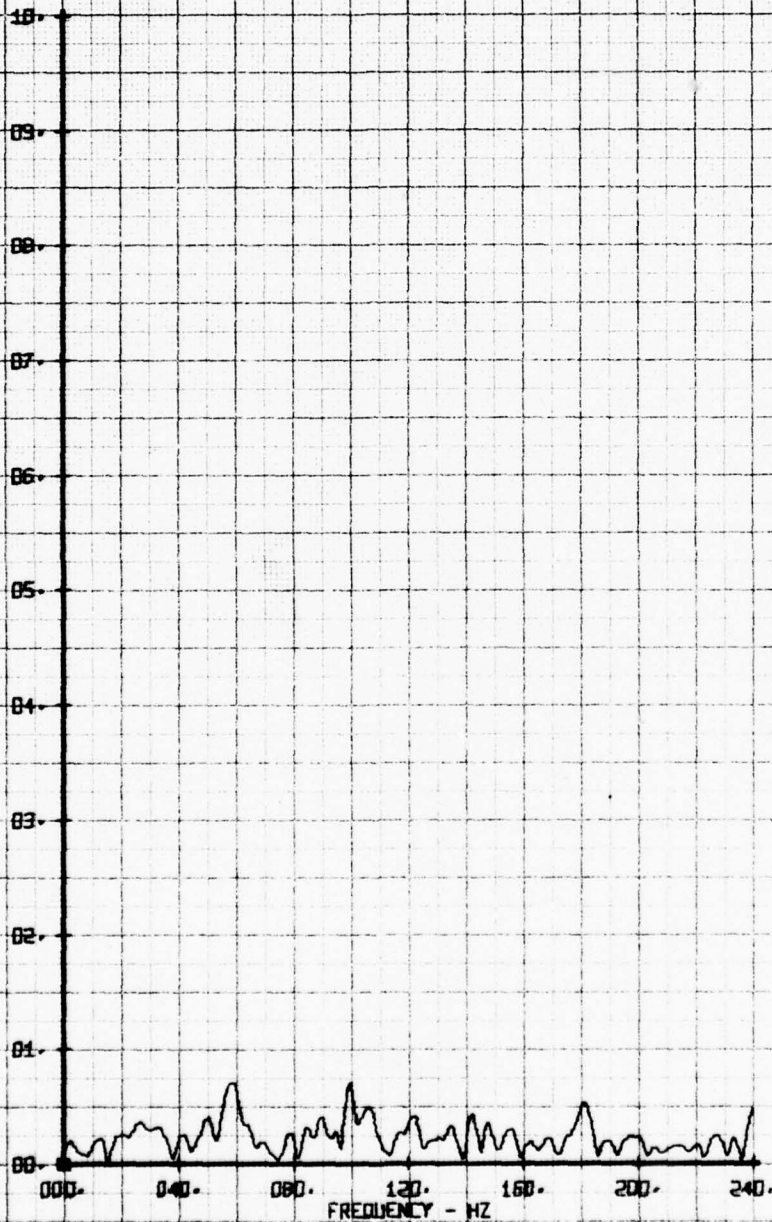


NOT FILM WARE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW BASIC SYS 150RST
RUN 174 TP 3

LEGEND

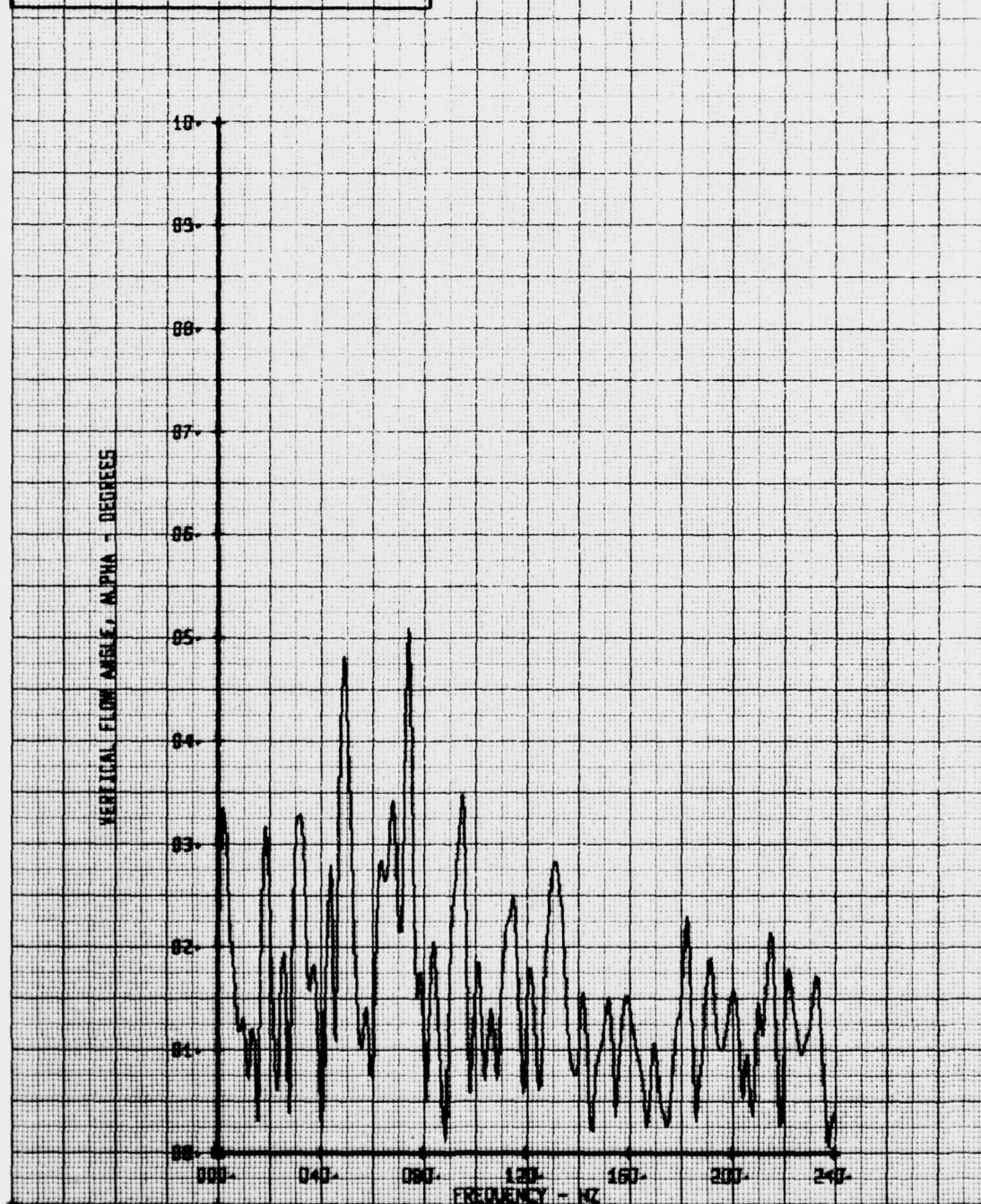
CH	PARAMETER
65	V-BETA

X-2 VELOCITY COMPONENT V-BETA FPS



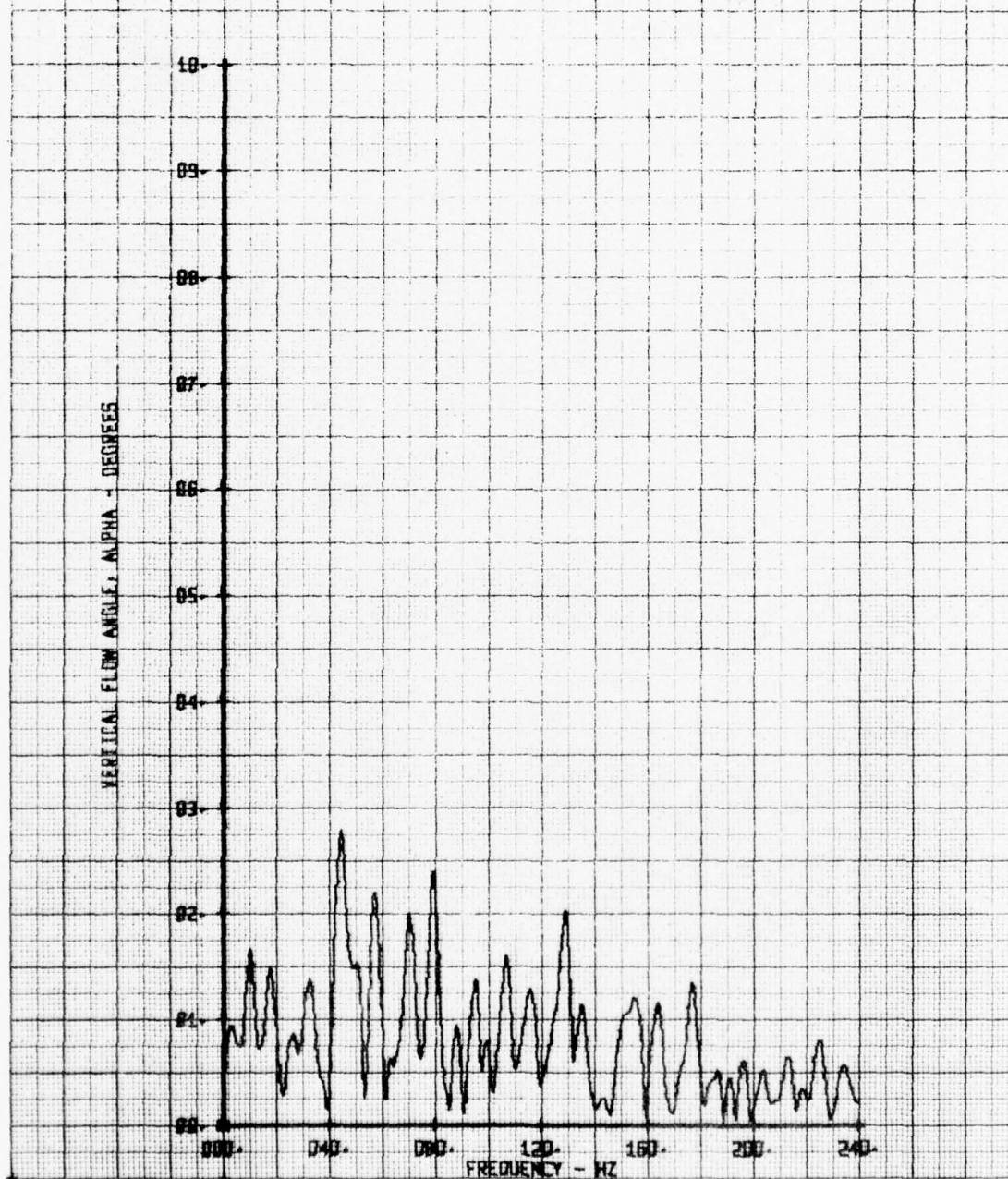
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 2

LEGEND
CH PARAMETER
56 ALPHA



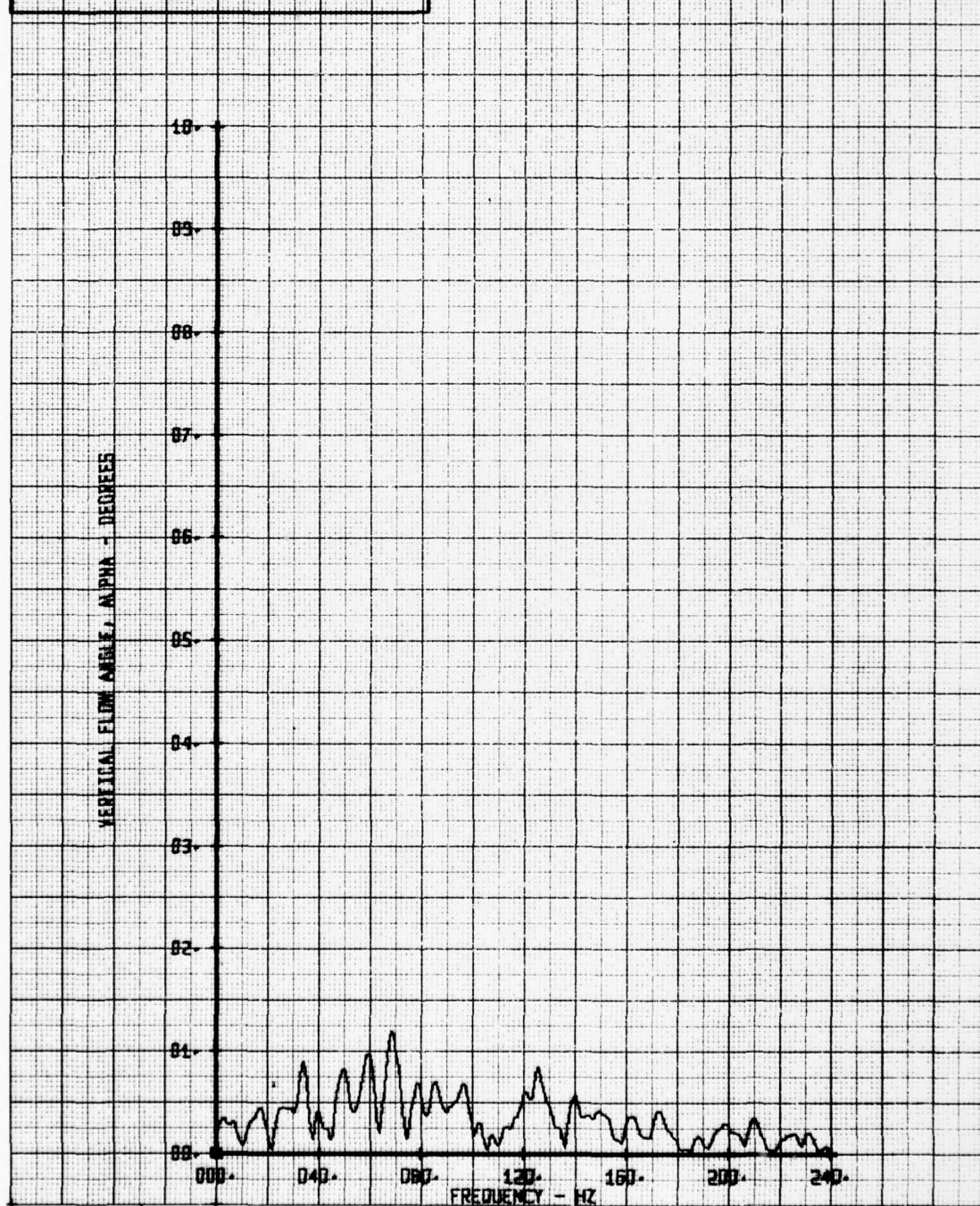
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 3

LEGEND
CH PARAMETER
66 ALPHA



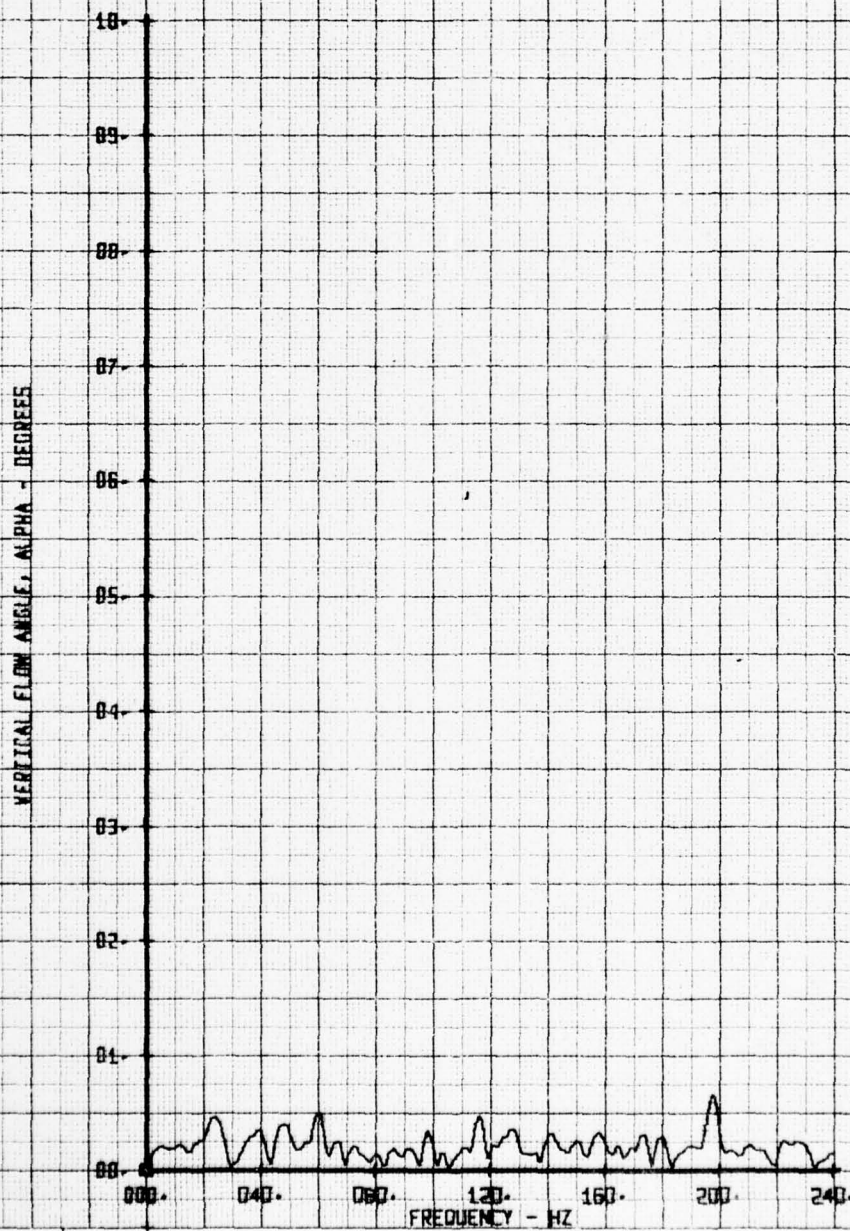
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET WIDE CN. SHD. 40P
RUN 175 TP 4

LEGEND
CH 56 PARAMETER
ALPHA



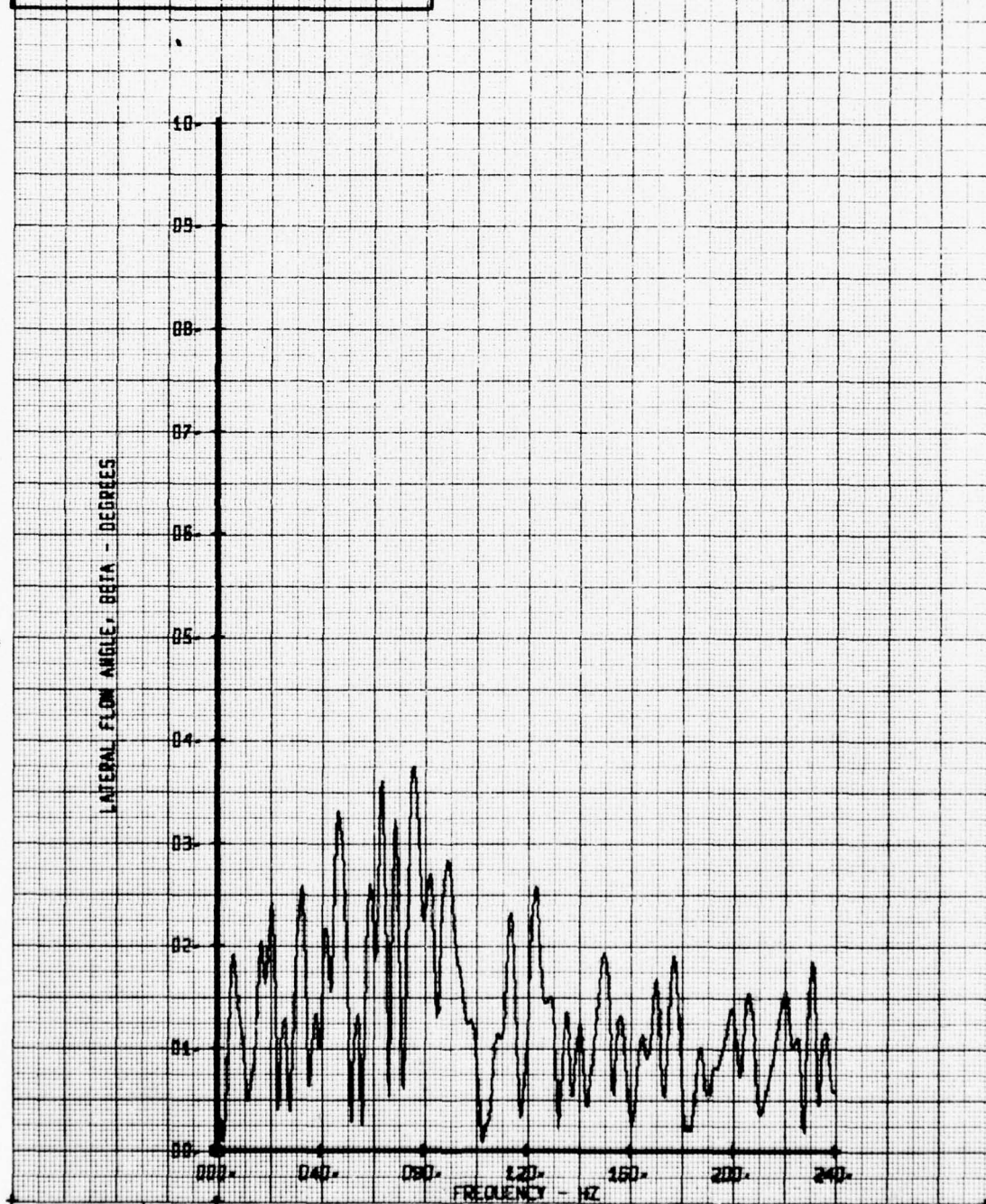
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 5

LEGEND
CH PARAMETER
66 ALPHA



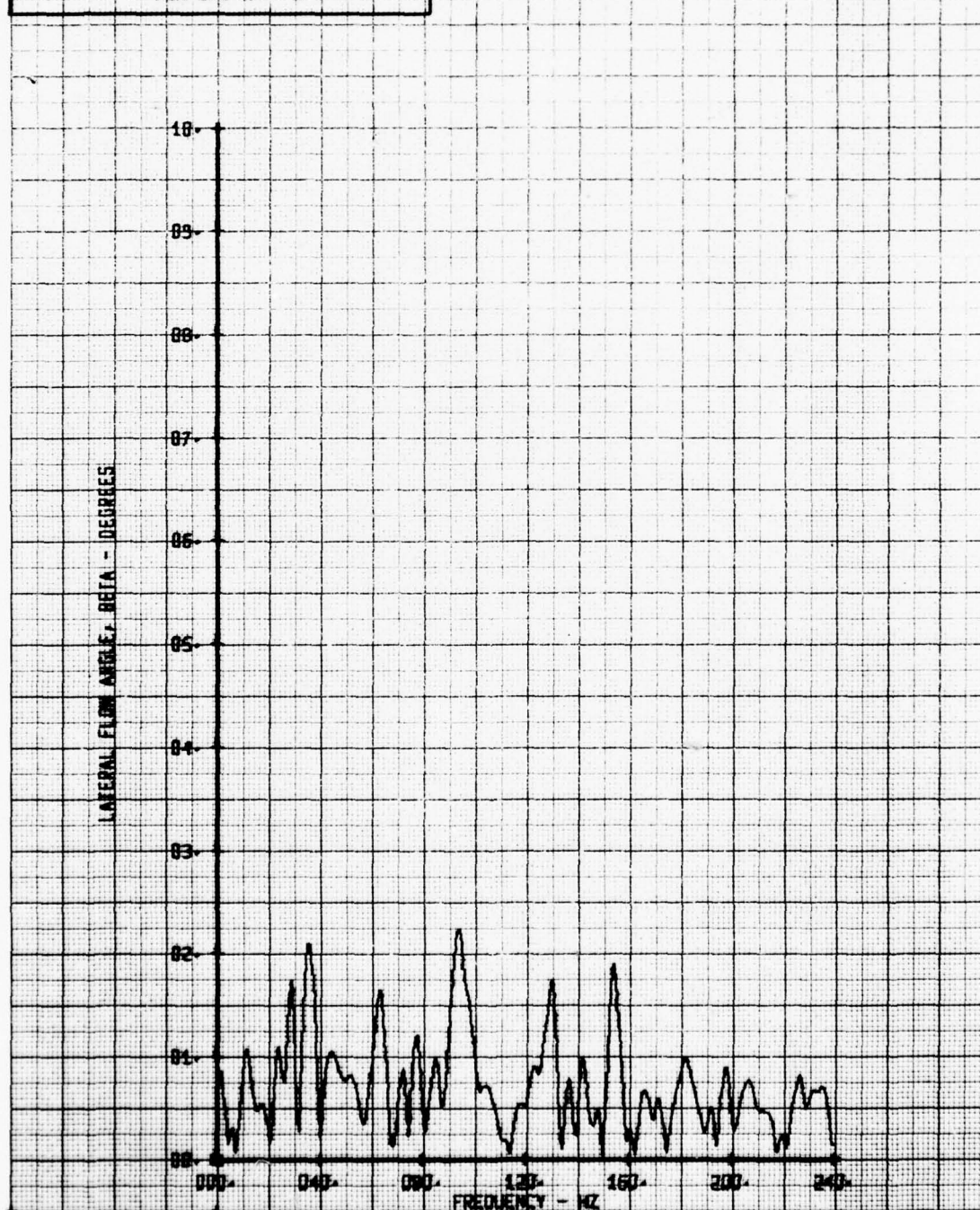
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 2

LEGEND
CH 65
PARAMETER
BETA



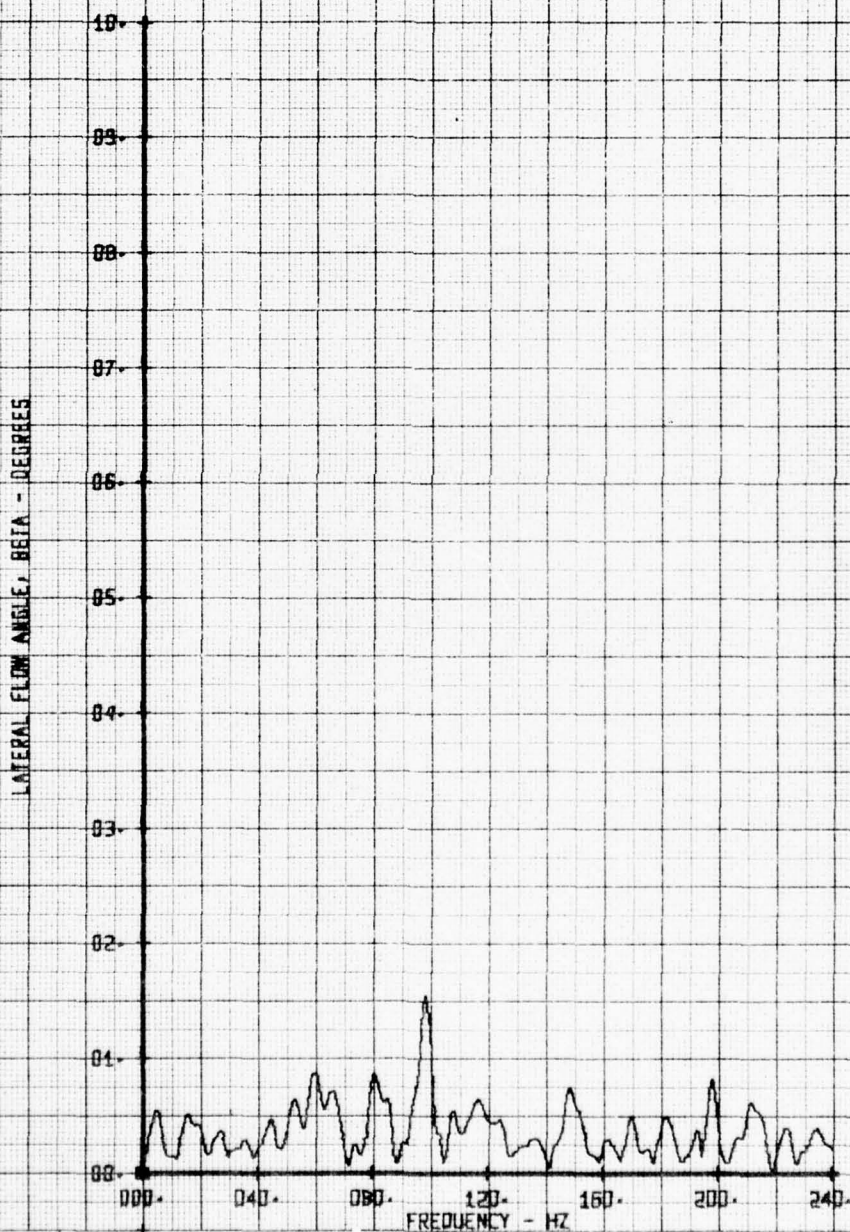
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 3

LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR FLOW WIDE CH. SMO. 40P
RIN 175 TP 4

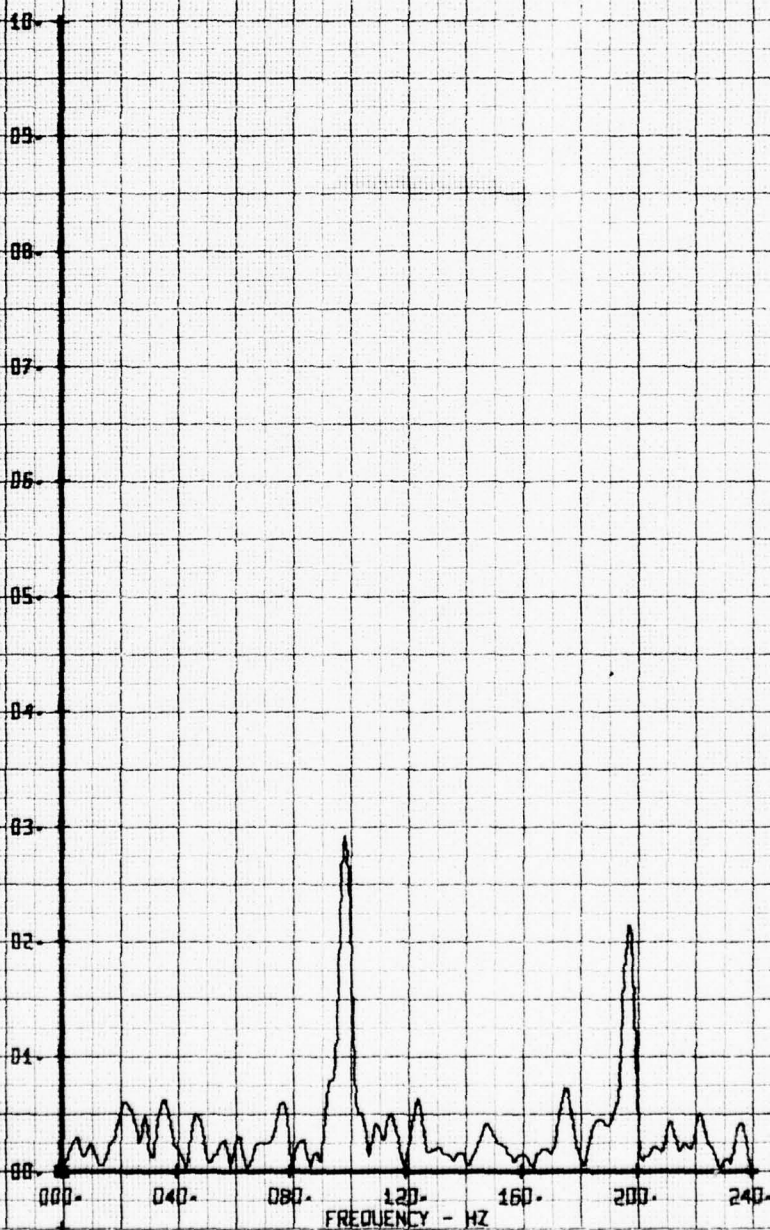
LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR FLOW WIDE CH. SHD. 40P
 RUN 175 TP 5

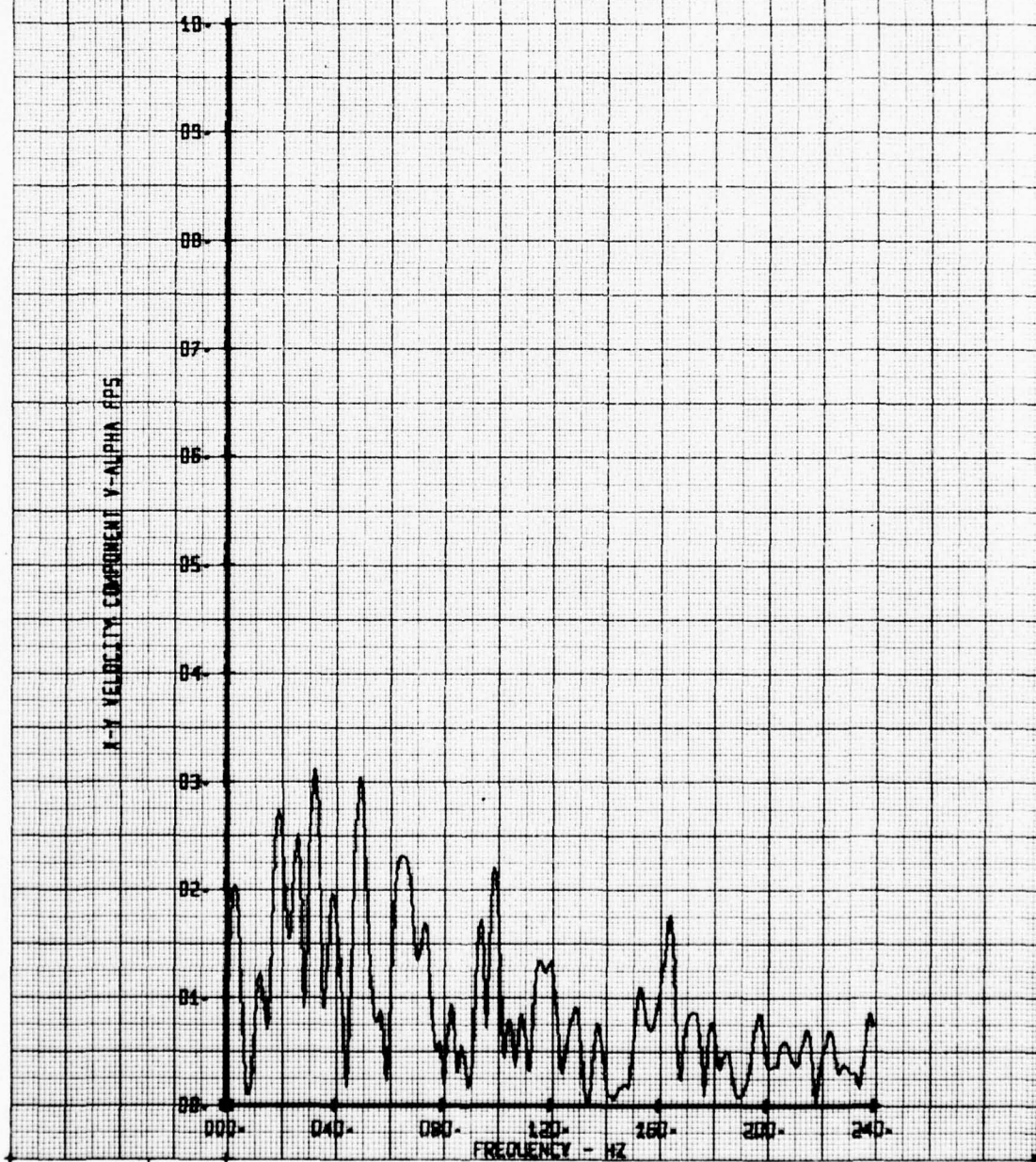
LEGEND
 CH 65
 PARAMETER BETA

LATERAL FLOW ANGLE, BETA - DEGREES



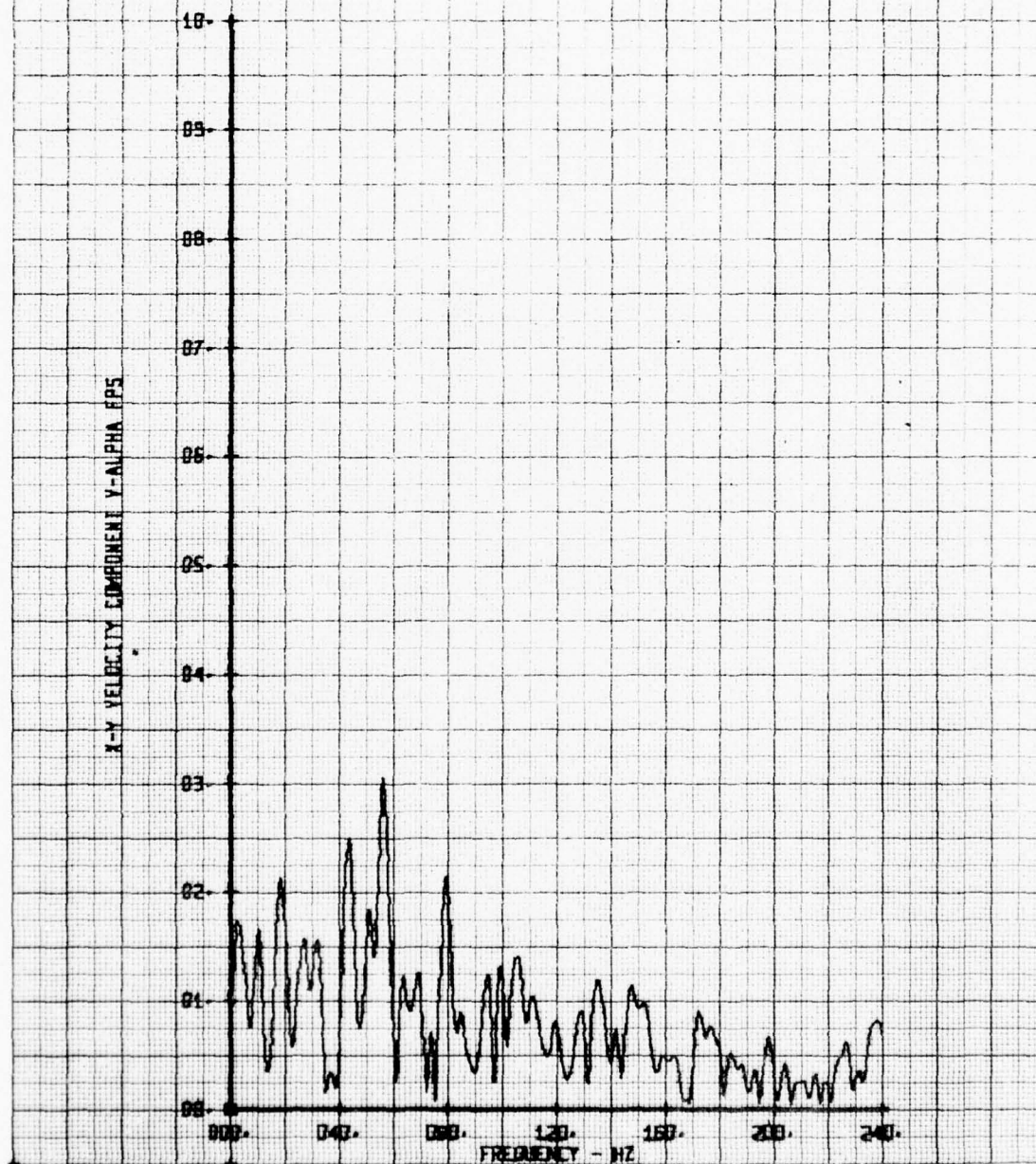
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 2

LEGEND
CH 66
PARAMETER
V-ALPHA



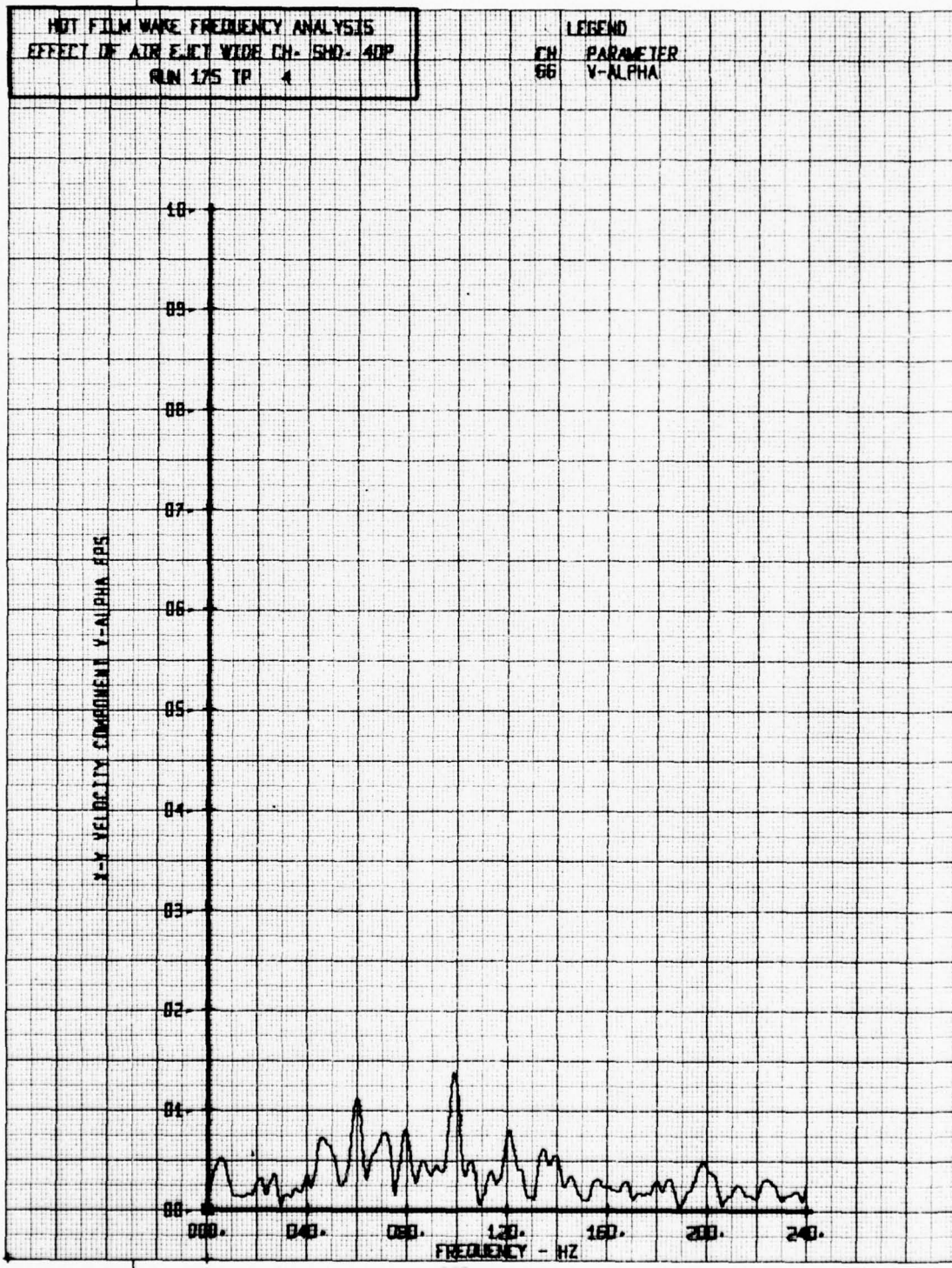
HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHO. 40P
RUN 175 TP 3

LEGEND
CH 66
PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET WIDE CH- 5HD- 4DP
RUN 175 TP 4

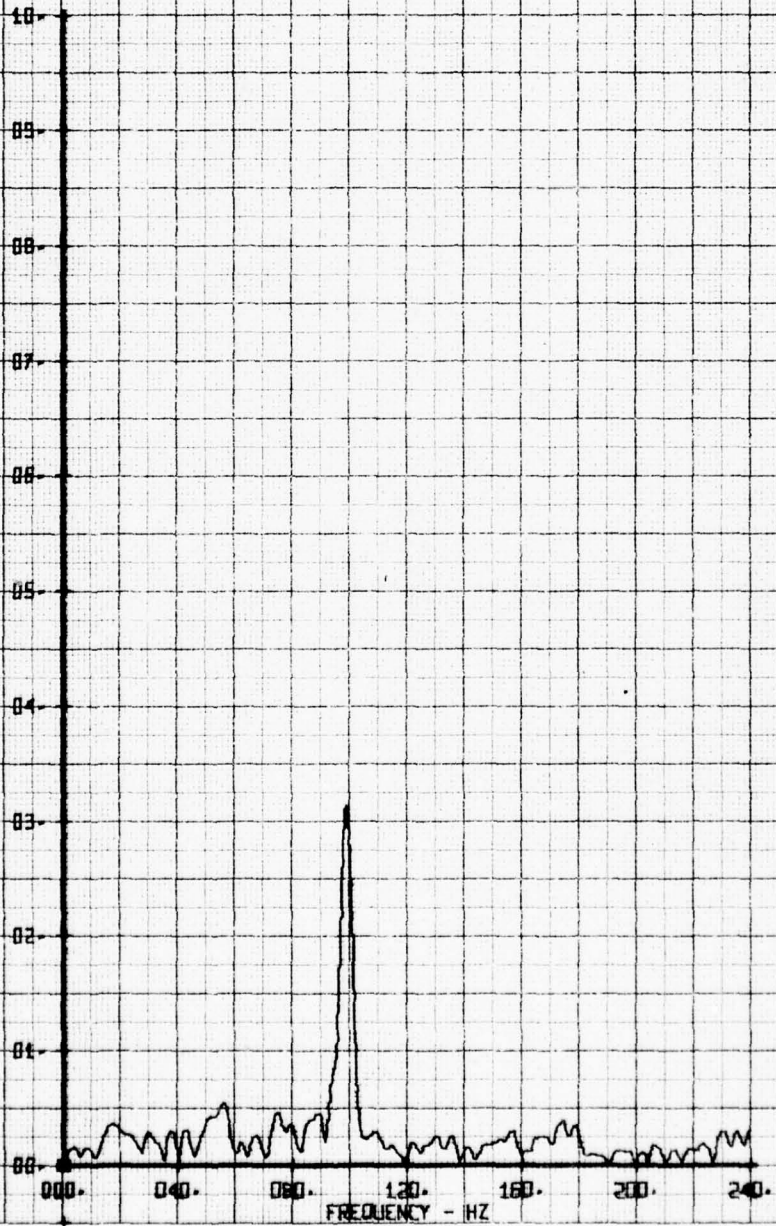
LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR JET WIDE CH- 5H0- 40P
RUN 175 TP 5

LEGEND
CH PARAMETER
66 V-ALPHA

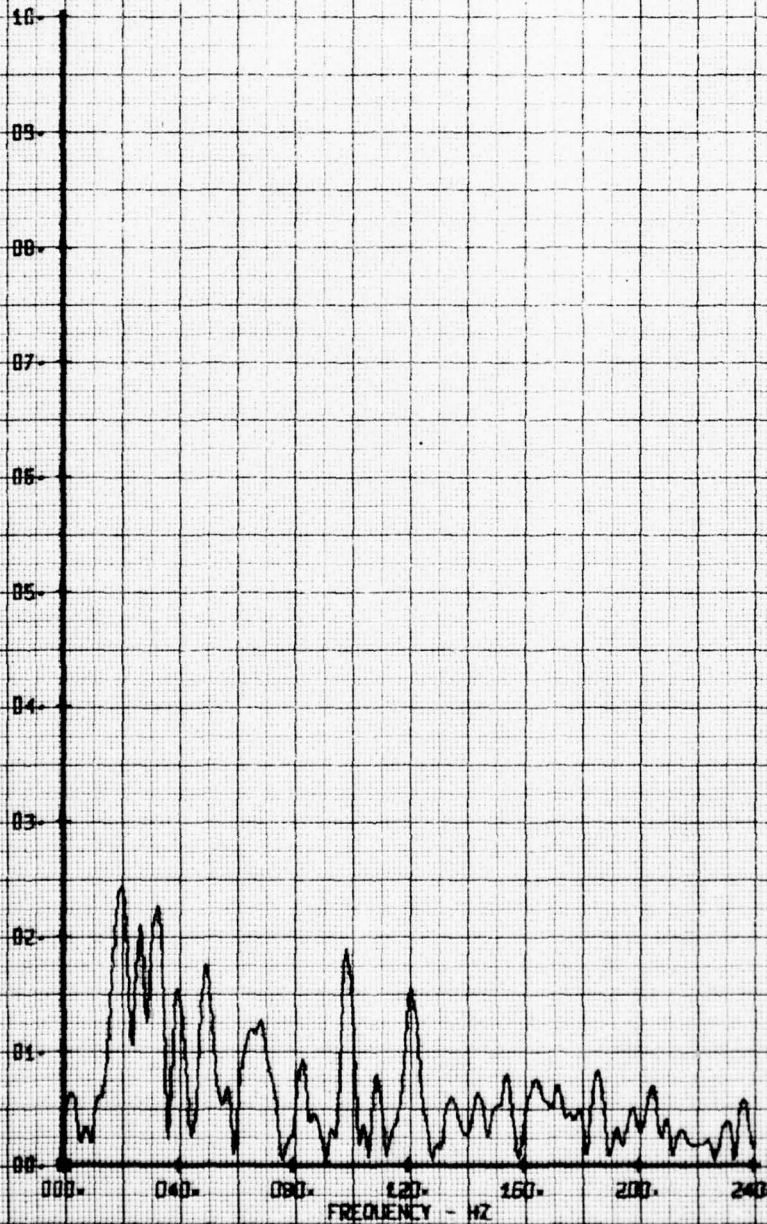
X-X VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHO. 40P
RUN 175 TP 2

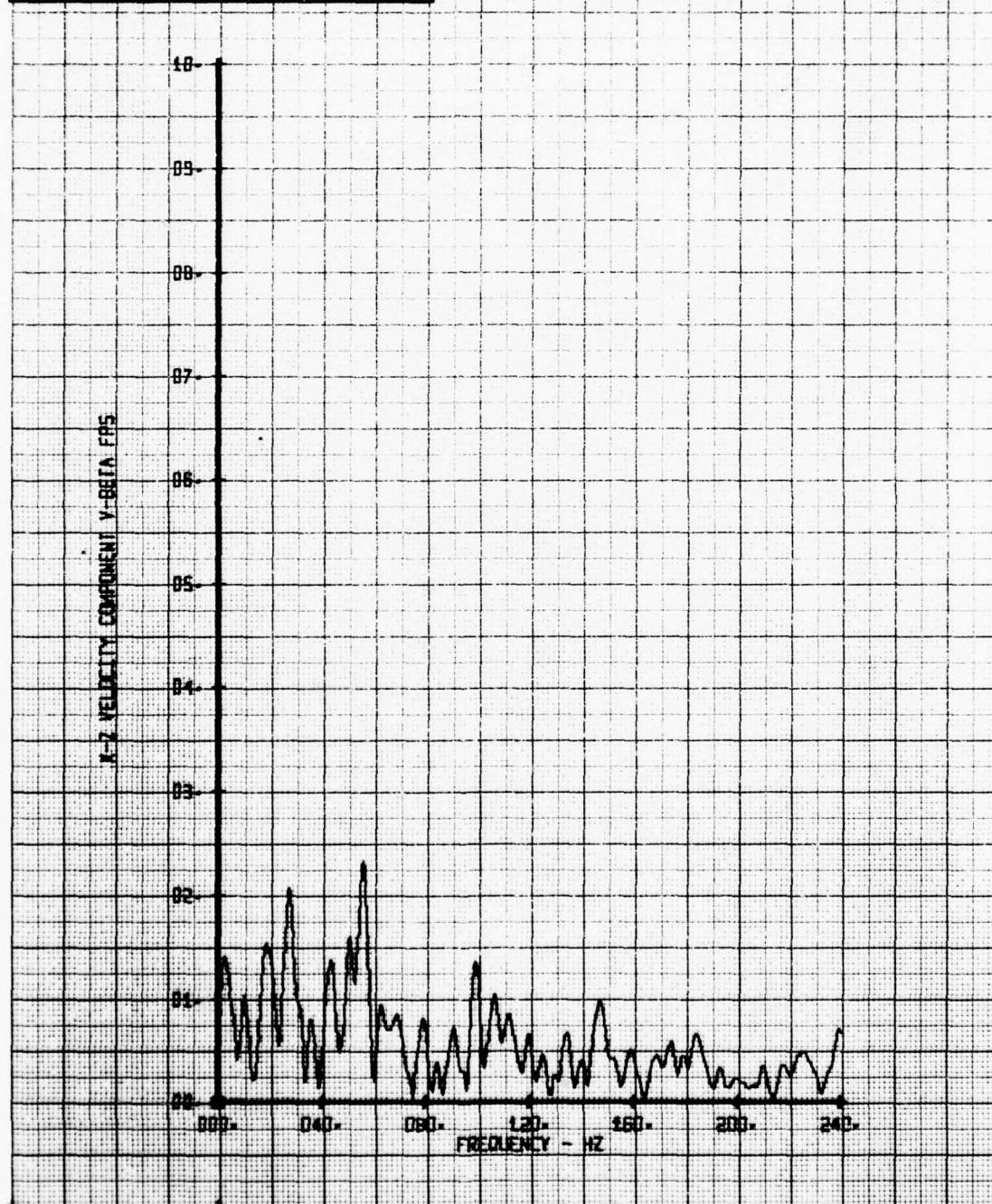
LEGEND
CH 65
PARAMETER
V-BETA

X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
 EFFECT OF AIR EJECT WIDE CH. SHD. 40P
 RUN 175 TP 3

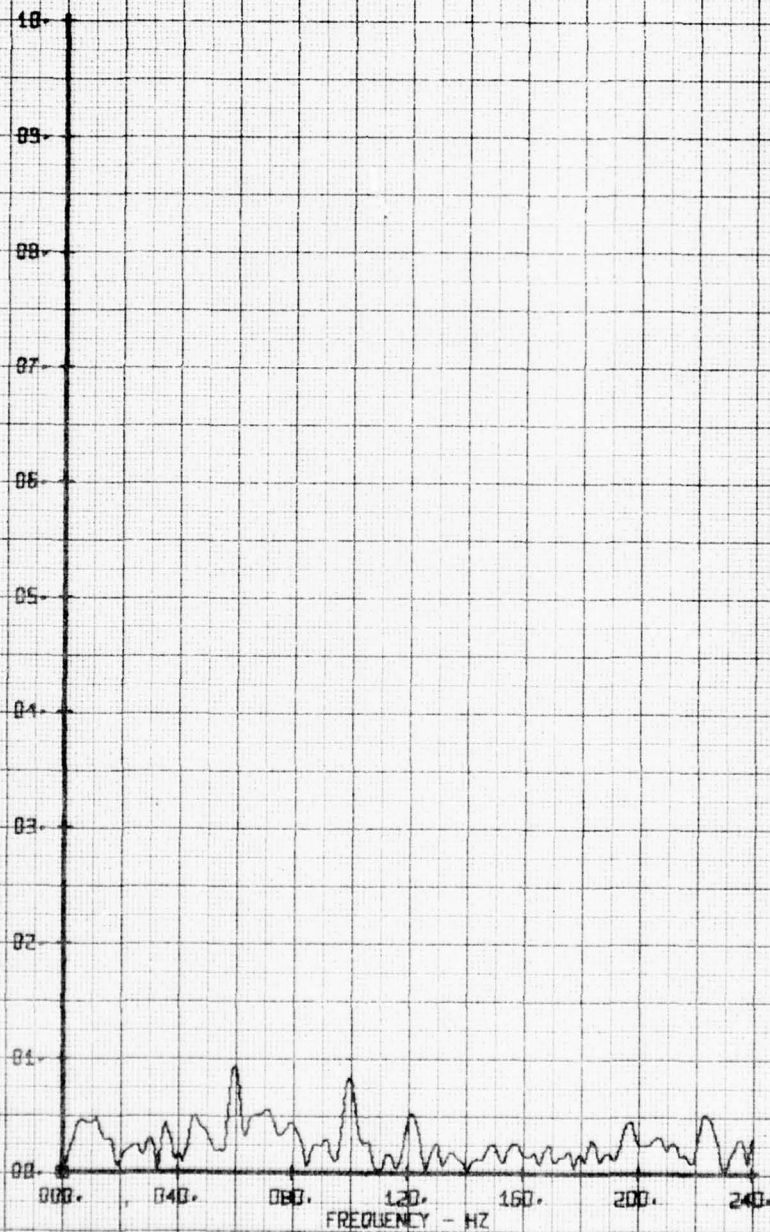
LEGEND
 CH PARAMETER
 65 V-BETA



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 4

LEGEND
CH PARAMETER
65 V-BETA

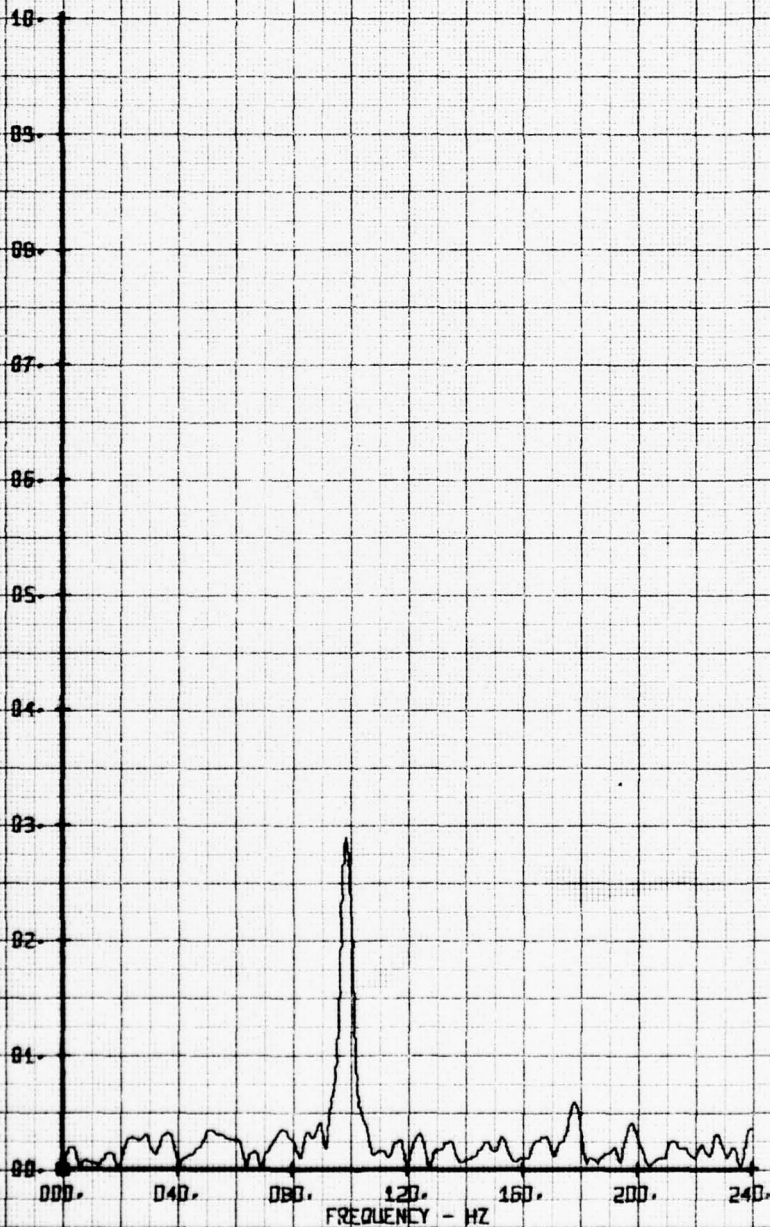
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
EFFECT OF AIR EJECT WIDE CH. SHD. 40P
RUN 175 TP 5

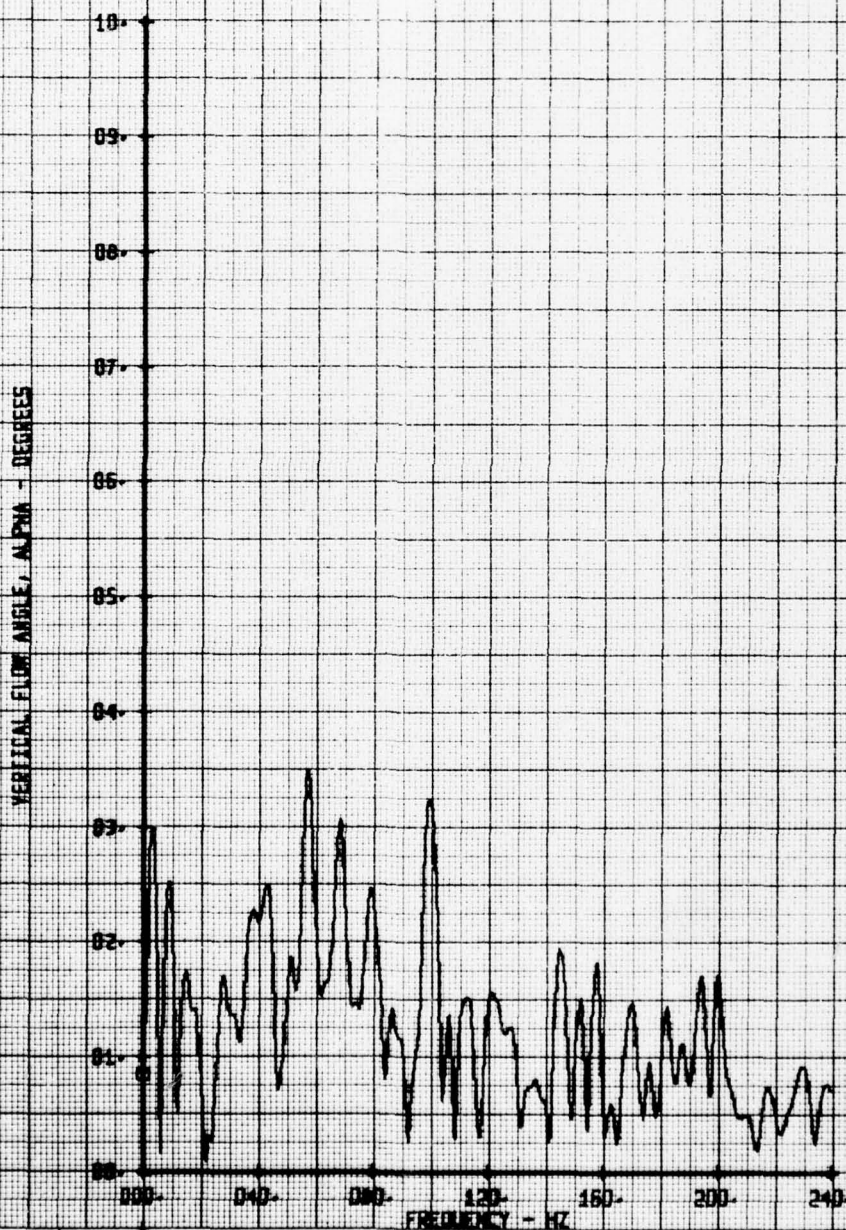
LEGEND
CH PARAMETER
65 V-BETA

X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-190 PSI
RUN 175 TP 1

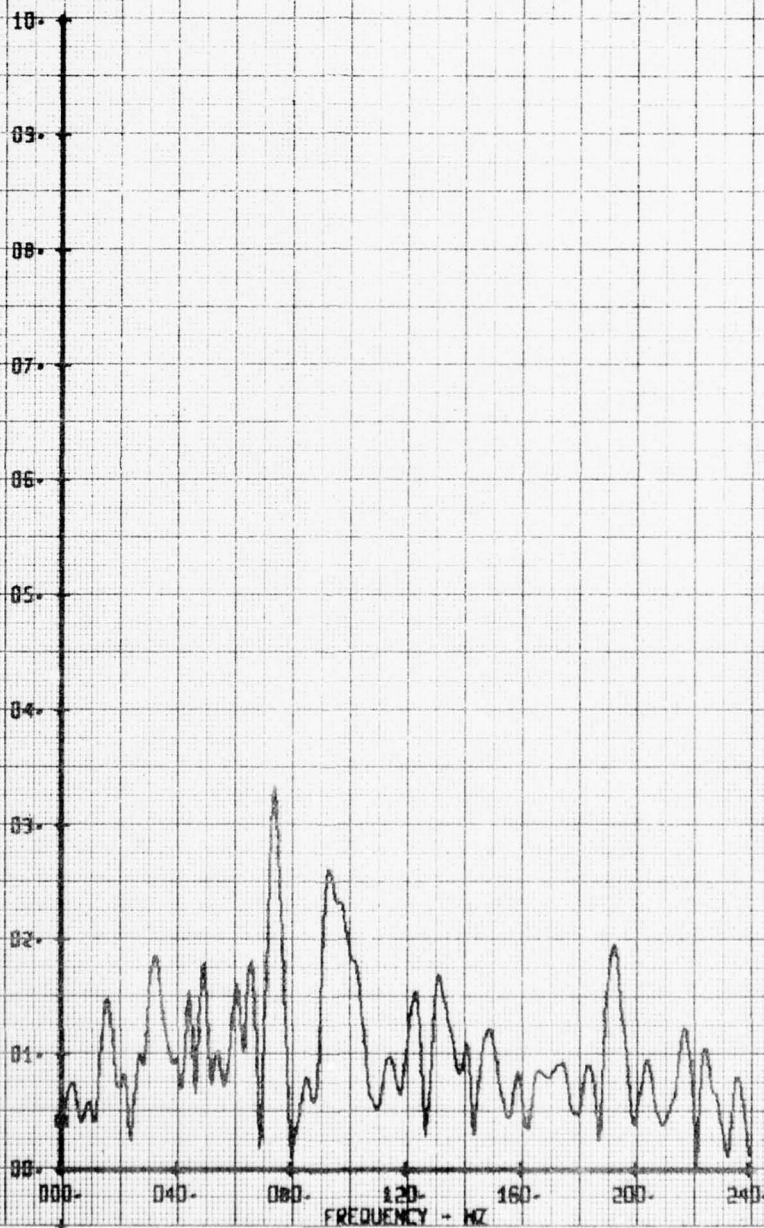
LEGEND
CH 66 PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 175 TP 2

LEGEND
CH 66 PARAMETER
66 ALPHA

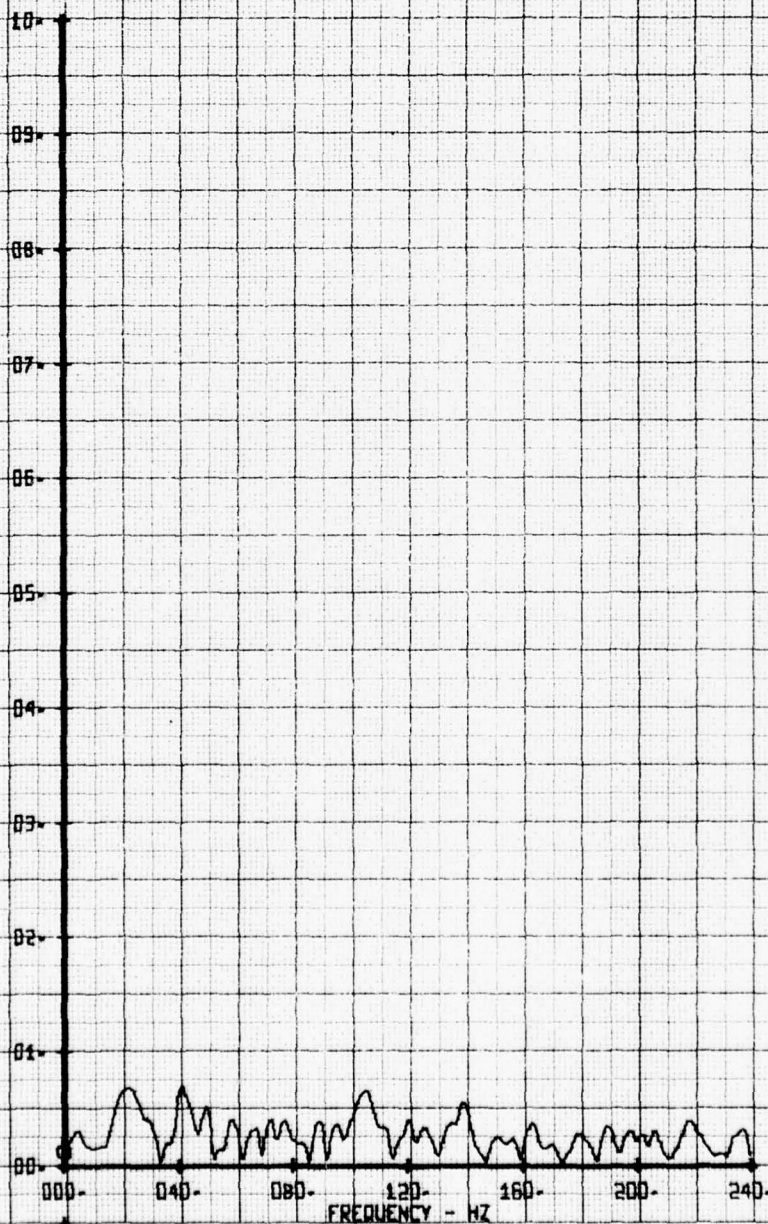
VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECTOR W/C SHROUD-150 PST
RUN 176 TP 3

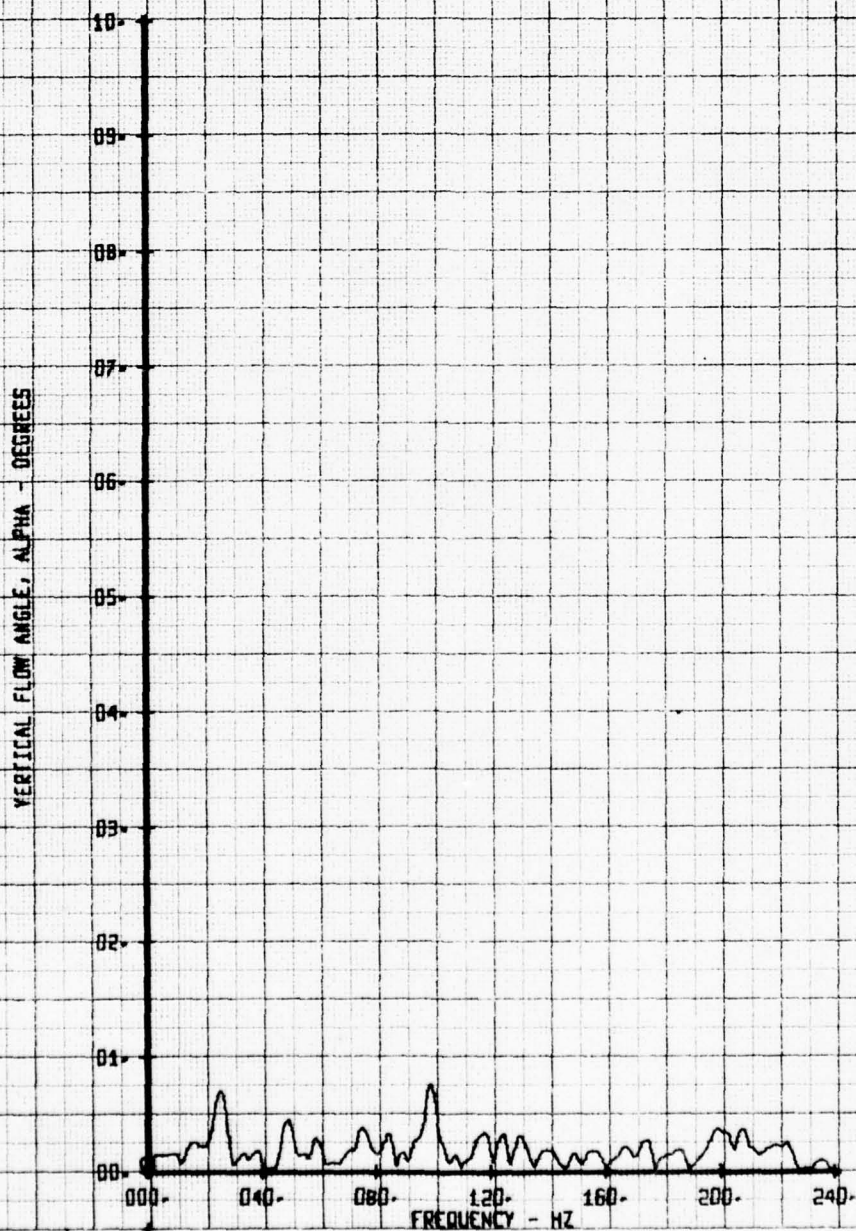
LEGEND
CH 66 PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



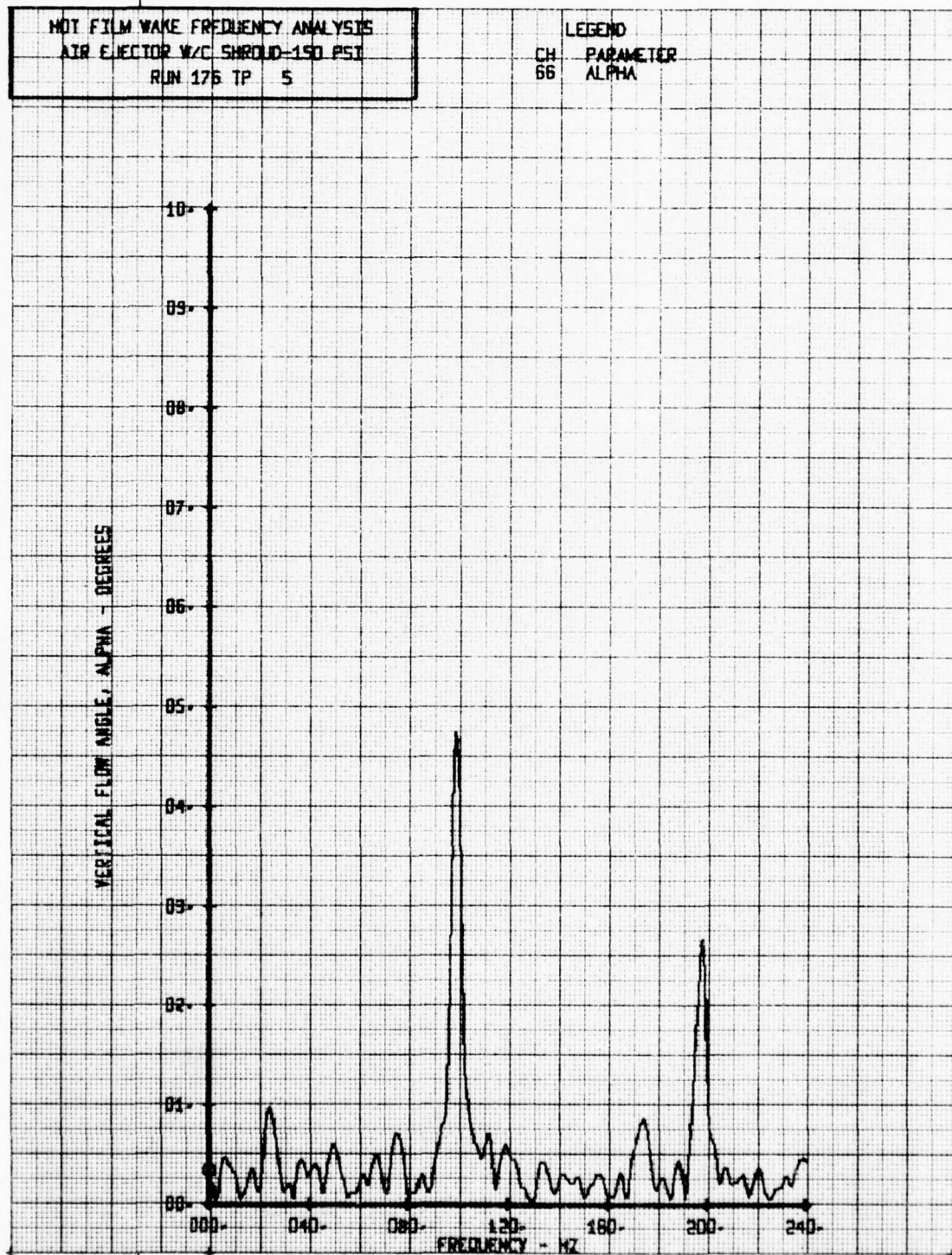
MOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECTOR W/C SHROUD-150 PST
RUN 176 TP 4

LEGEND
CH 66
PARAMETER
ALPHA



NOI FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PST
RUN 175 TP 5

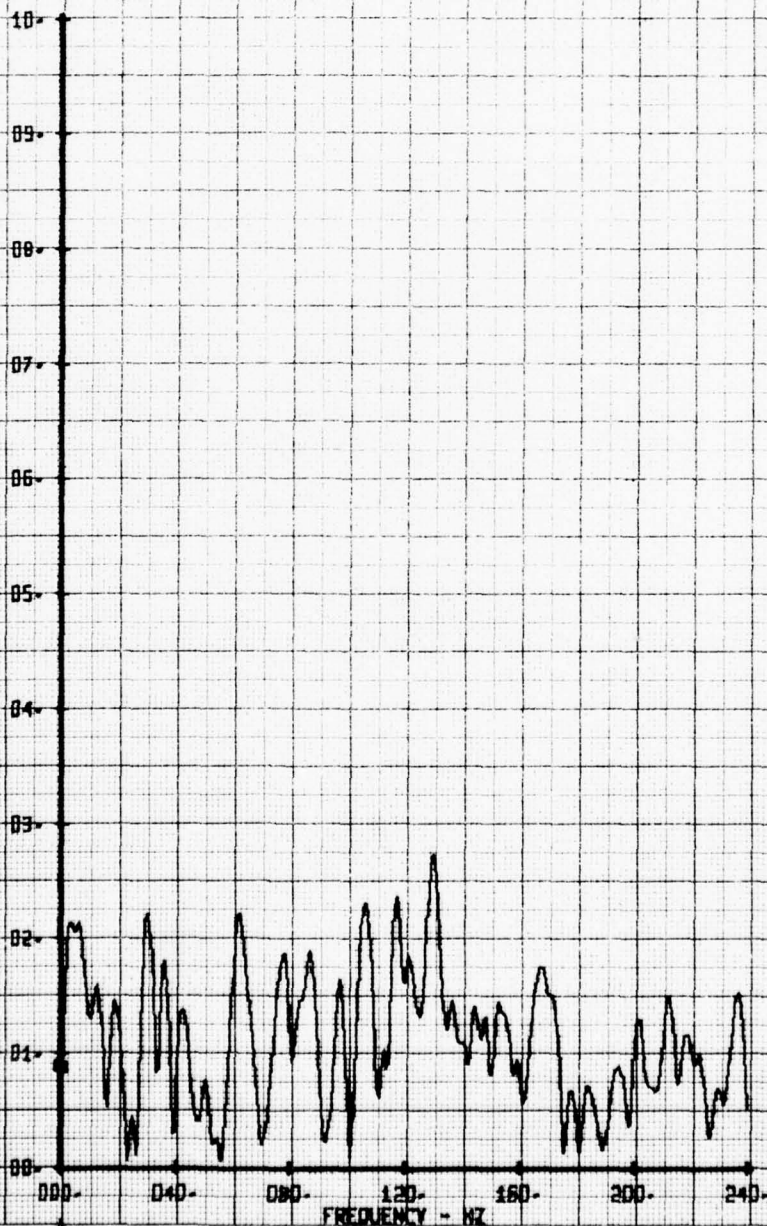
LEGEND
CH 66
PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PST
RUN 176 TP 1

LEGEND
CH 65
PARAMETER
BETA

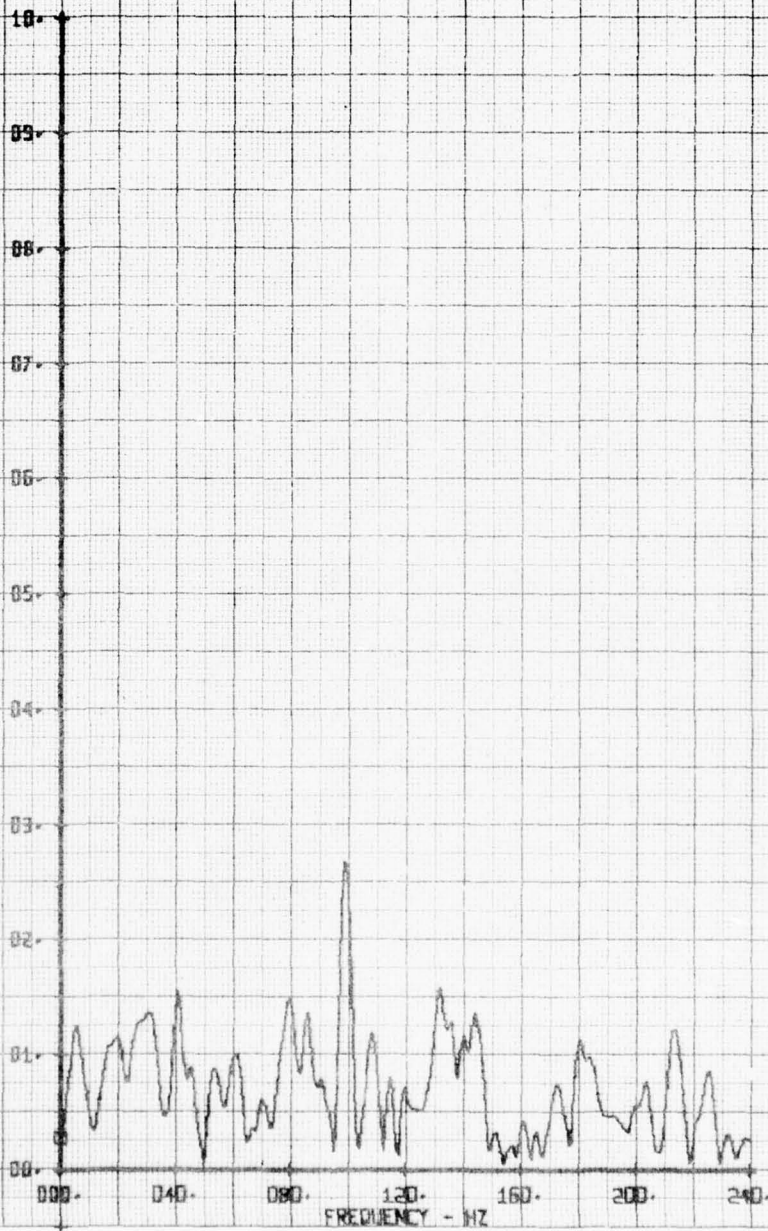
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 2

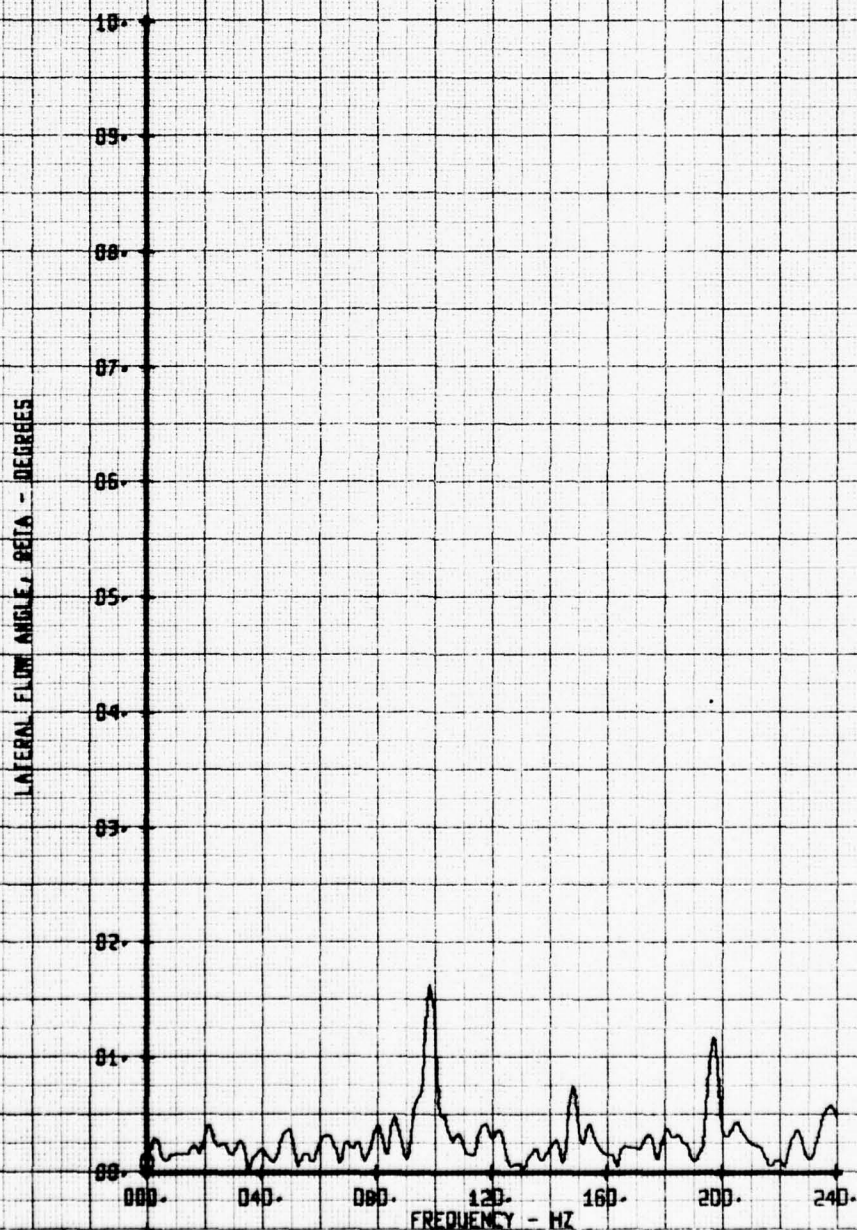
LEGEND
CH 65
PARAMETER
BETA

LATERAL FLOW ANGLE, BETA - DEGREES



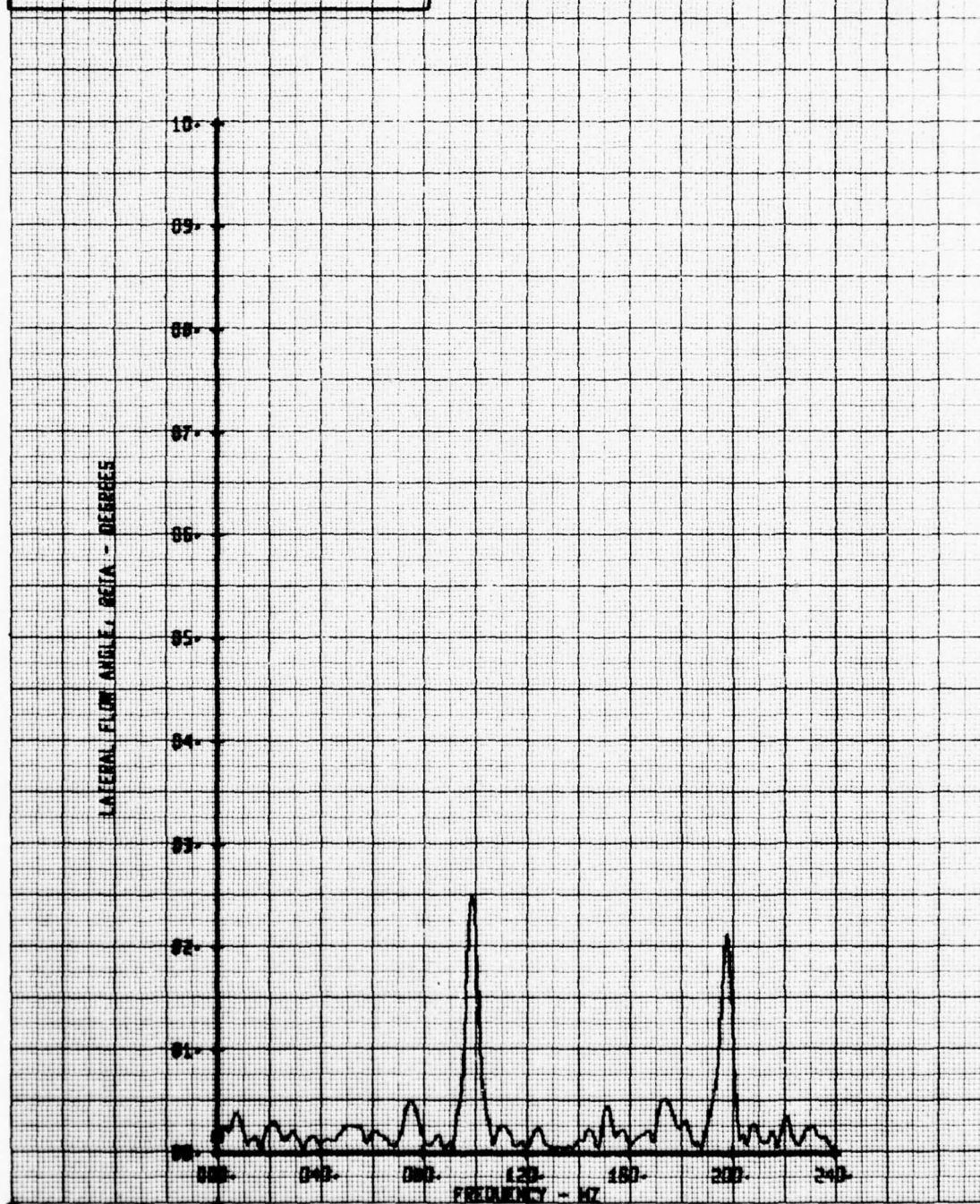
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 3

LEGEND
CH PARAMETER
65 BETA



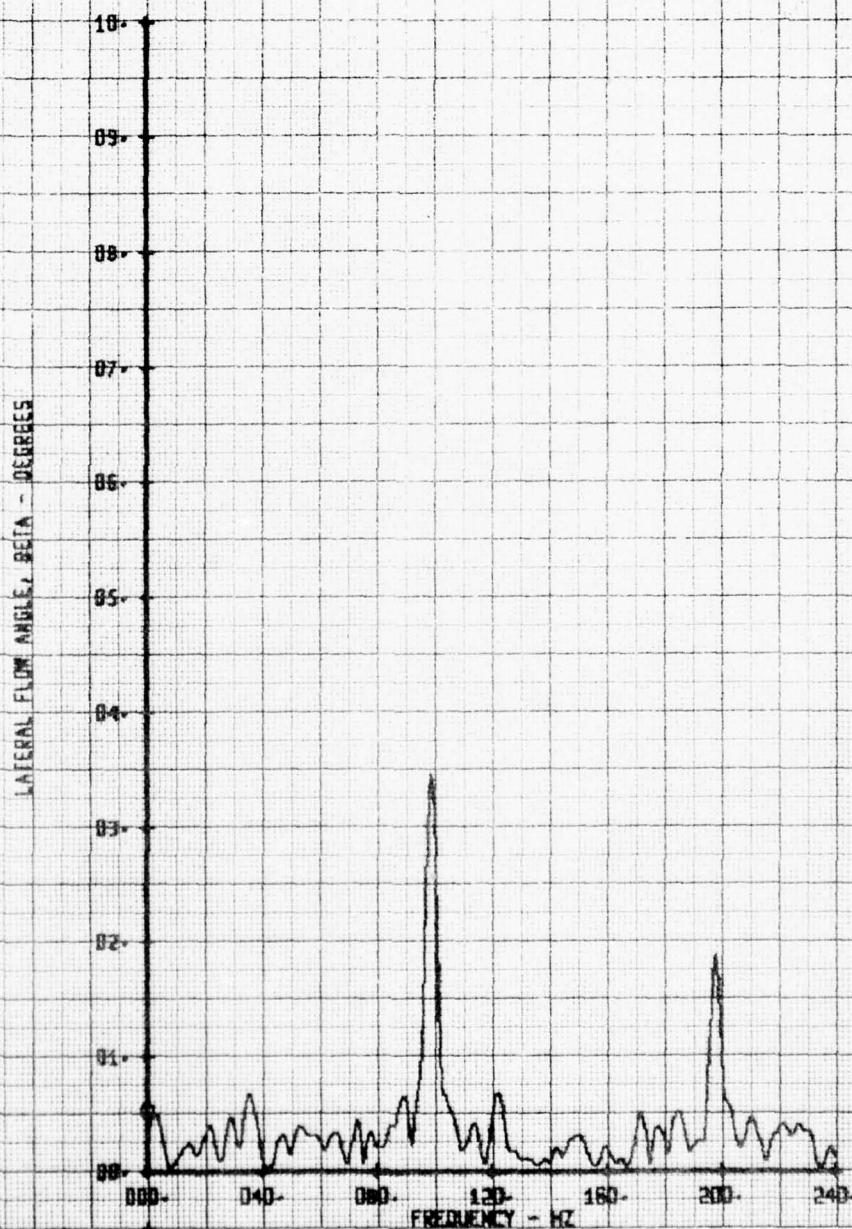
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/O SHROUD-150 PSI
RUN 176 TP 4

LEGEND
CH 65
PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 175 TP 5

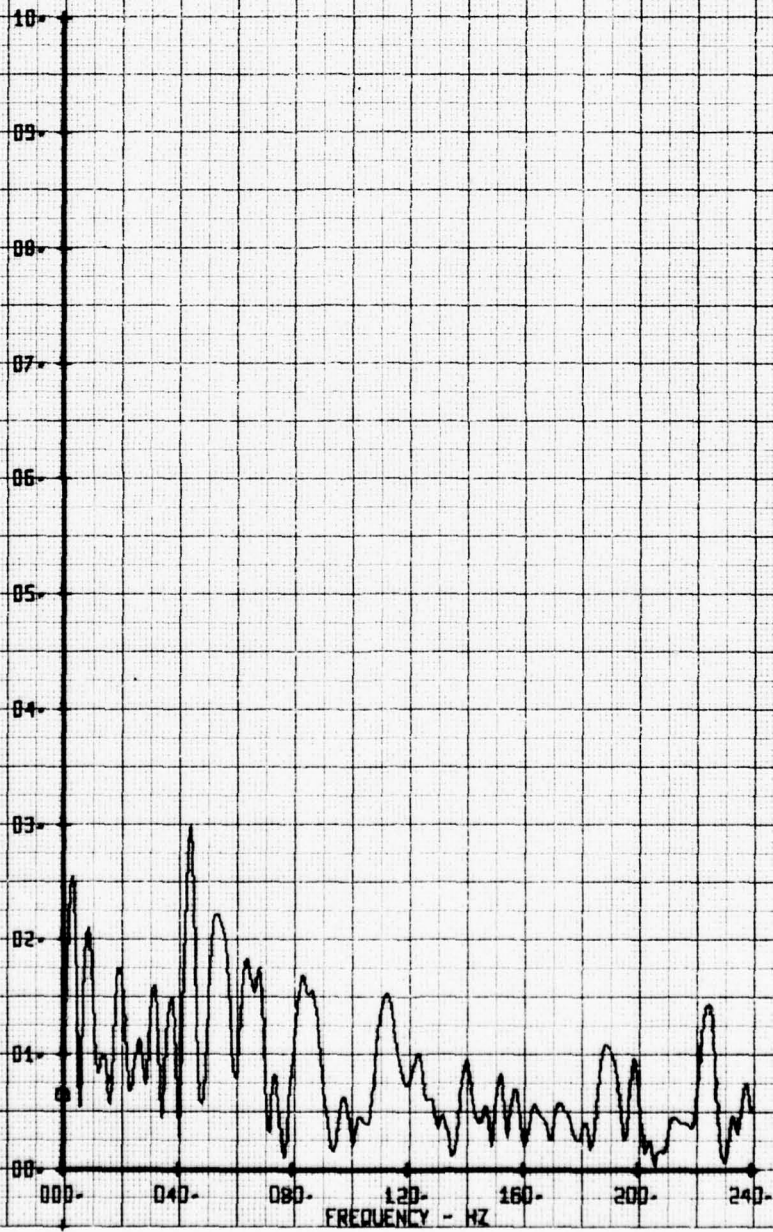
LEGEND
CH 65 PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLECTOR W/T SHROUD-150 PST
RUN 175 TP 1

LEGEND
CH 66
PARAMETER
V-ALPHA

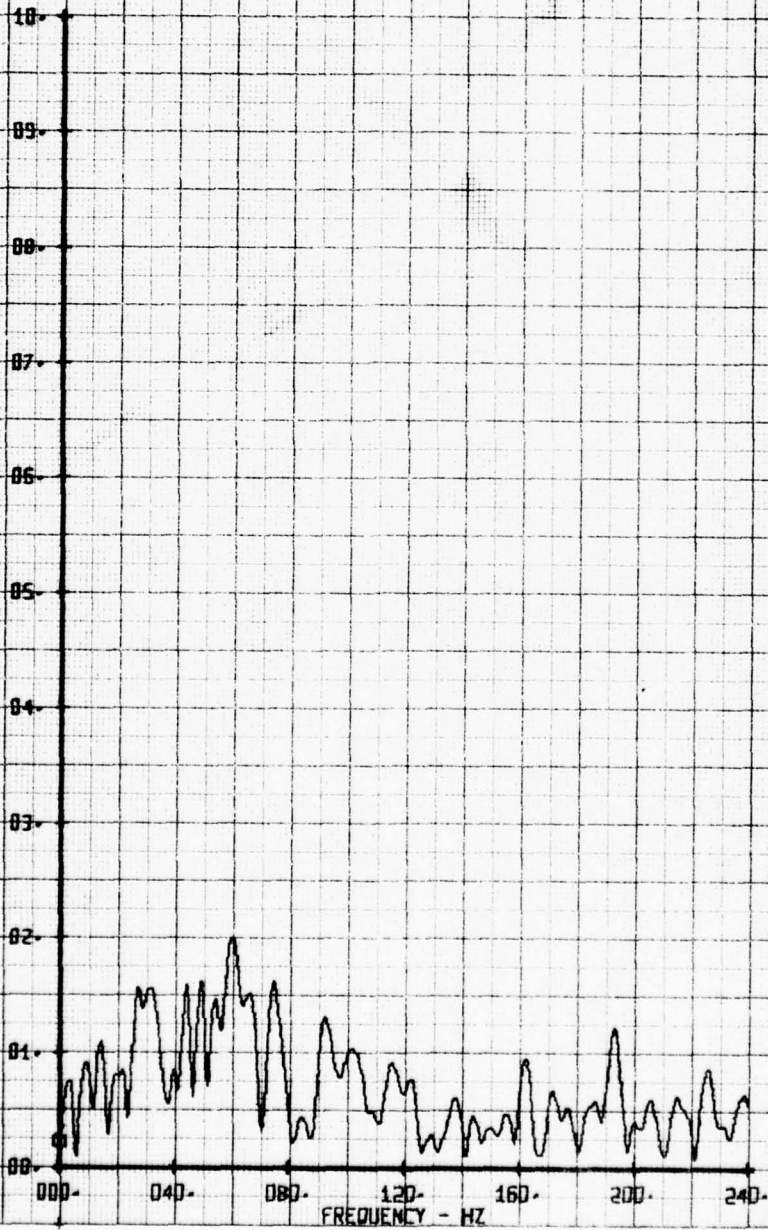
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 2

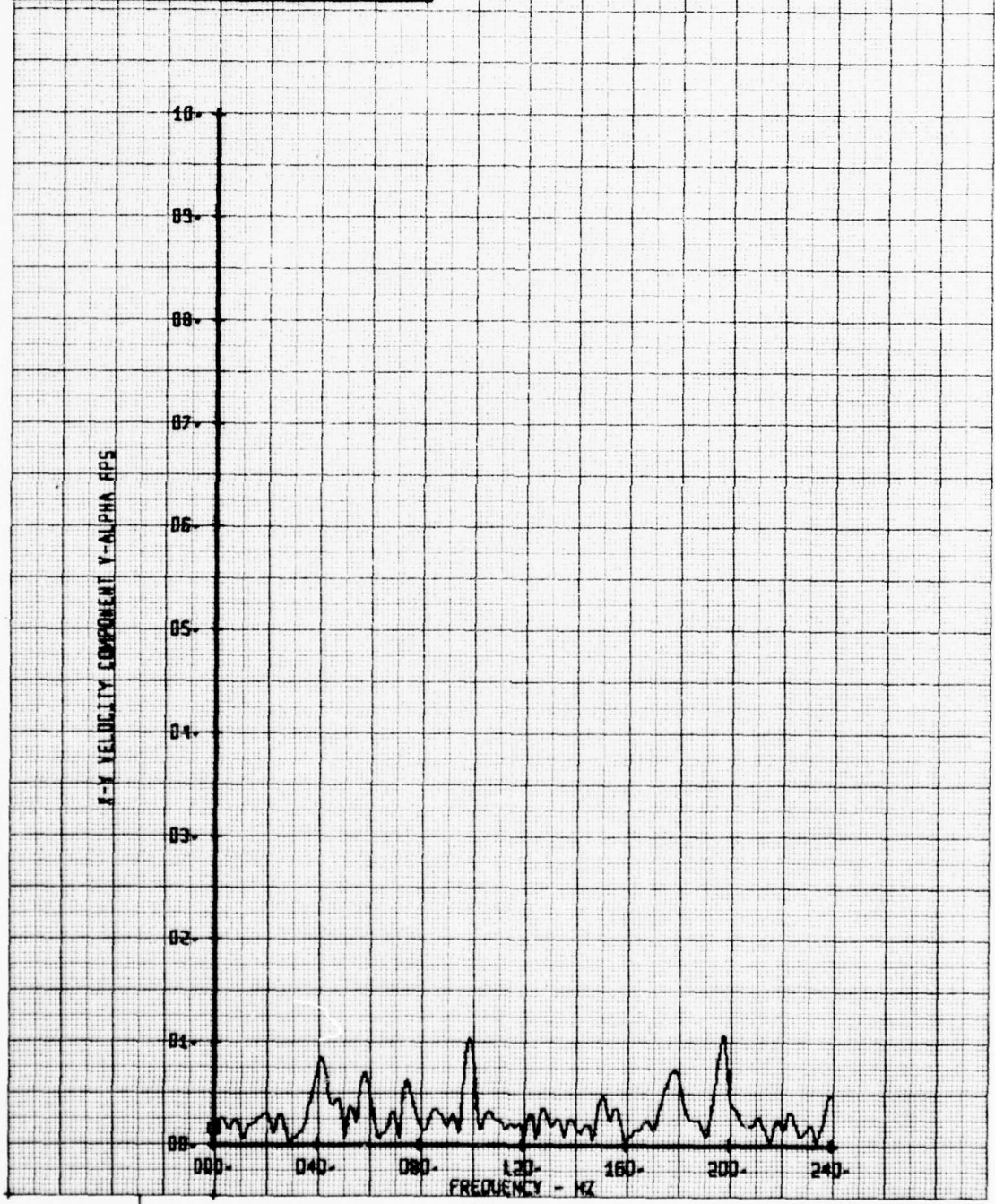
LEGEND
CH 56
PARAMETER
V-ALPHA

X-Y VELOCITY COMPONENT Y-ALPHA FPS



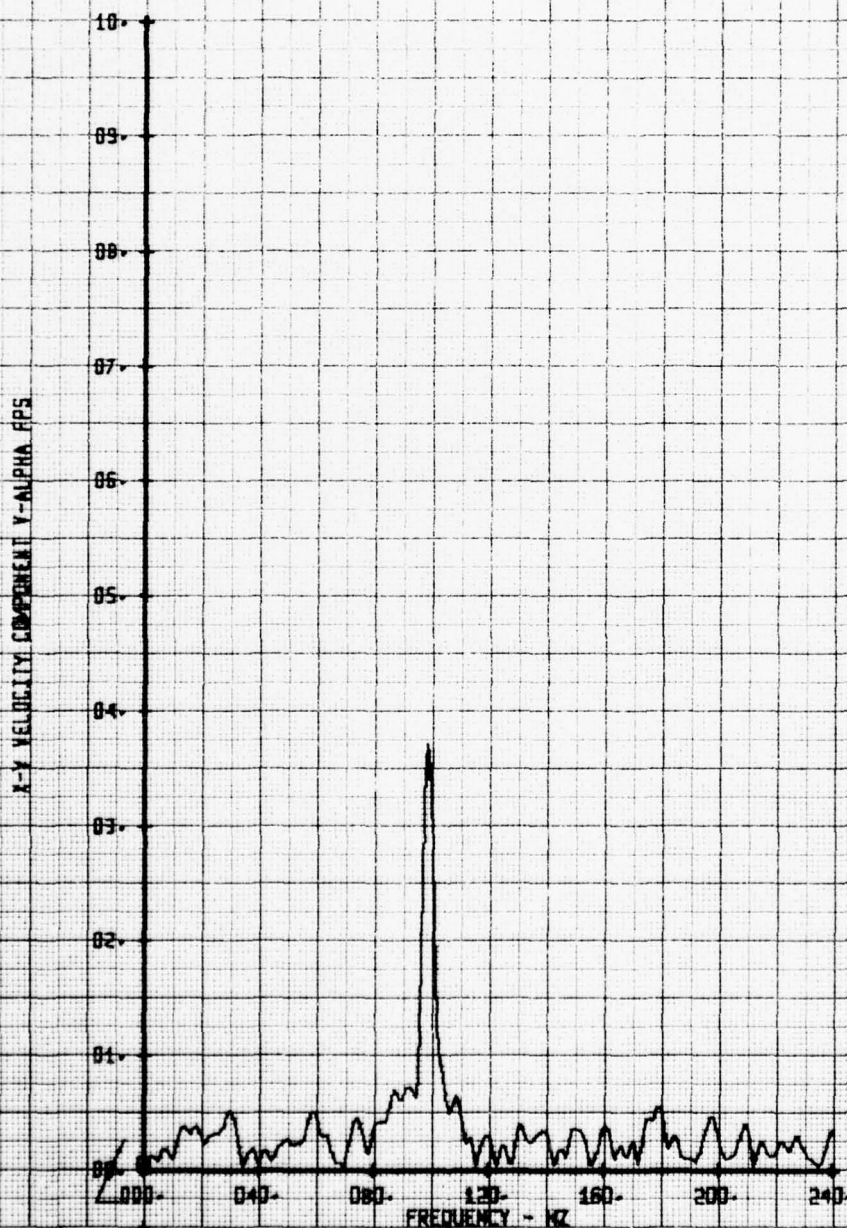
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 3

LEGEND
CH 66
PARAMETER
V-ALPHA



HDT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 4

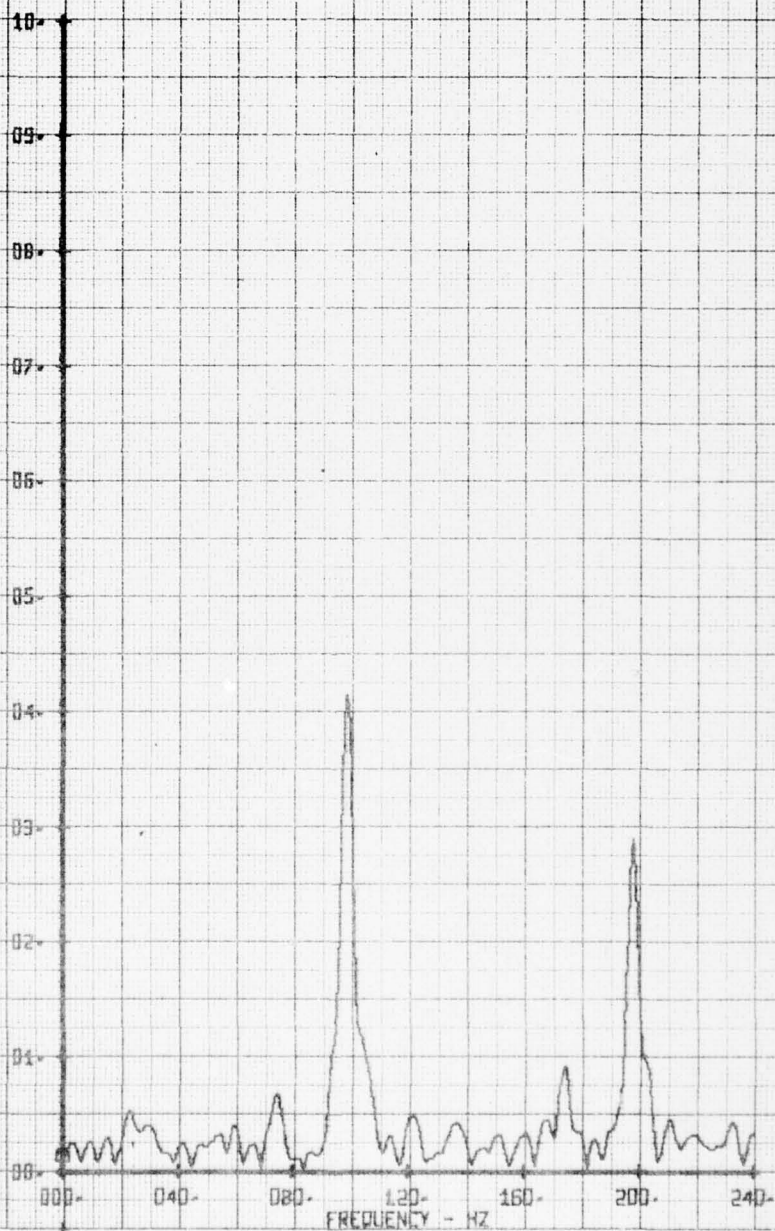
LEGEND
CH PARAMETER
66 V-ALPHA



NOI FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PST
RUN 175 TP 5

LEGEND
CH 66 PARAMETER
V-ALPHA

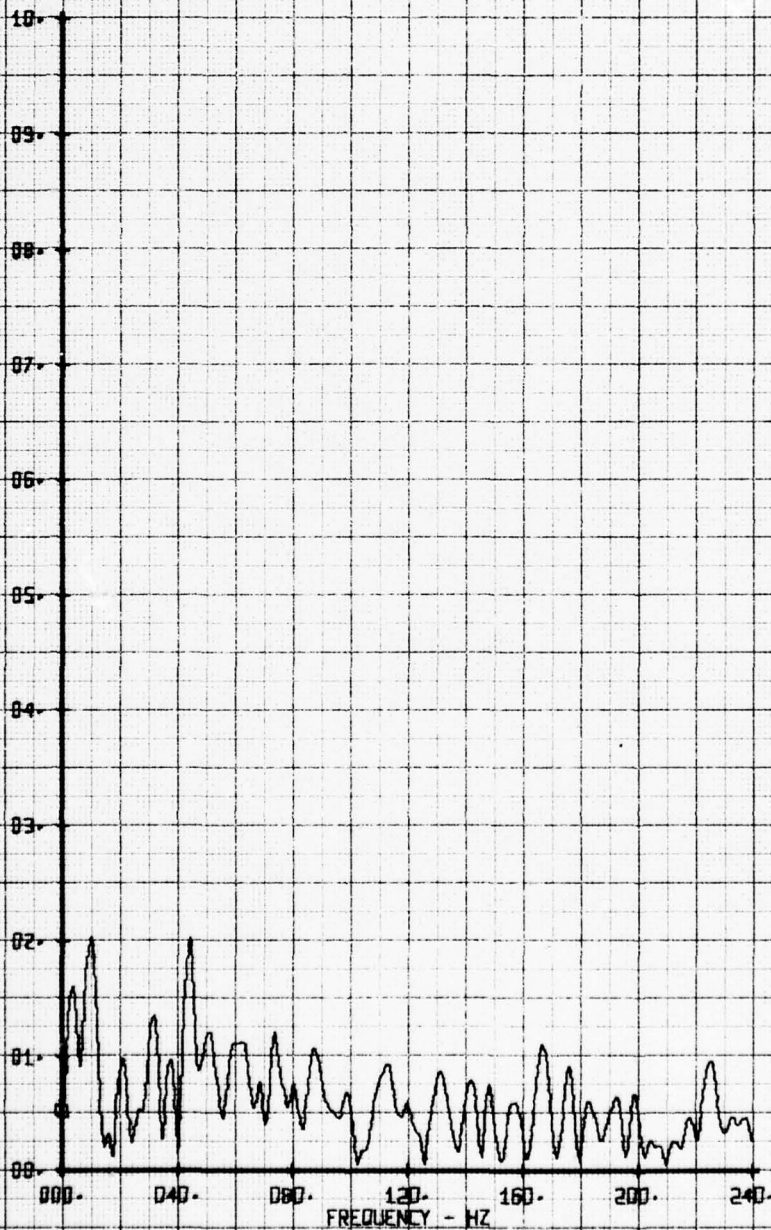
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 175 TP 1

LEGEND
CH 65
PARAMETER
V-BETA

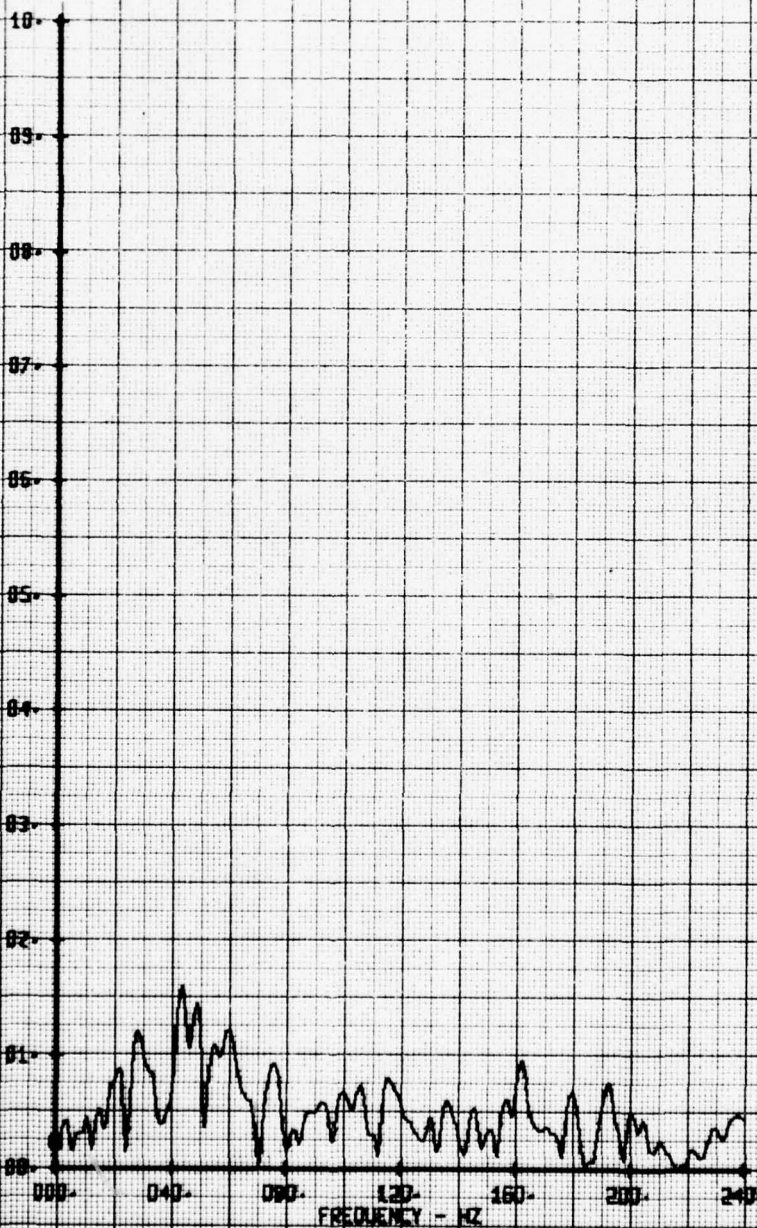
X-Z VELOCITY COMPONENT V-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 2

LEGEND
CH PARAMETER
65 V-BETA

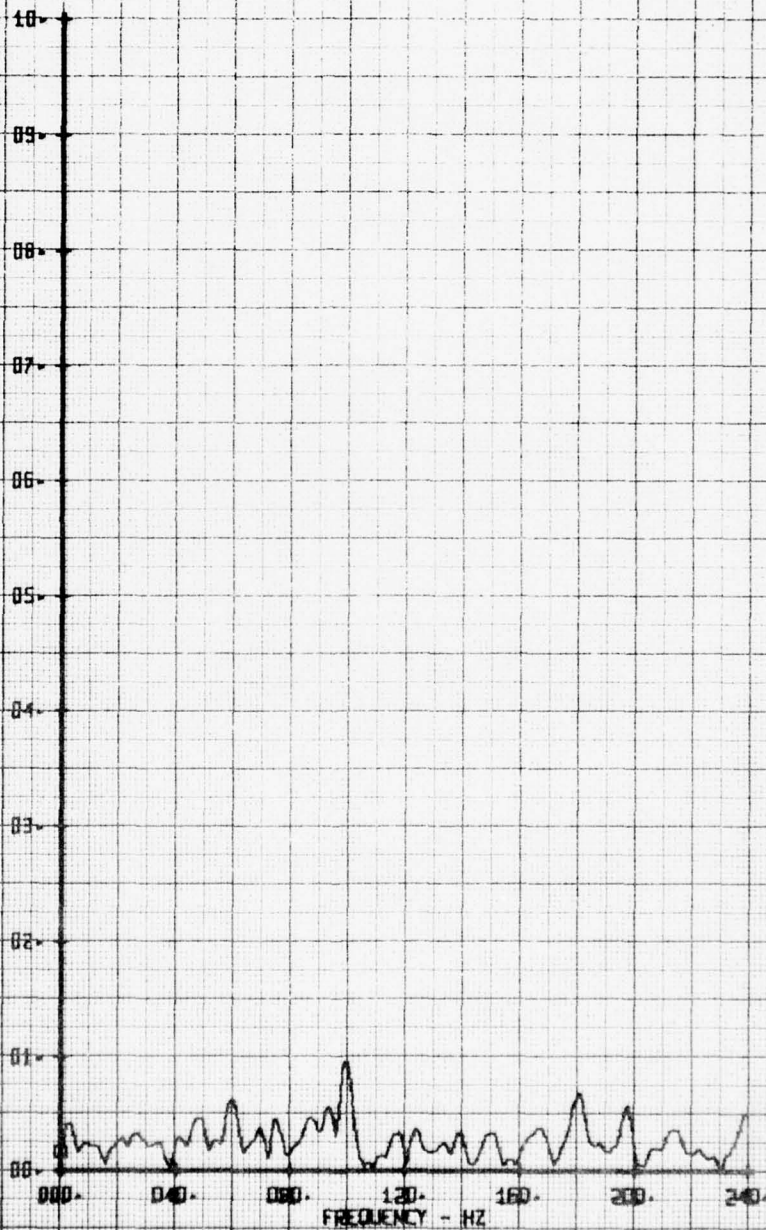
X-Z VELOCITY COMPONENT V-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 3

LEGEND
CH 65 PARAMETER
V-BETA

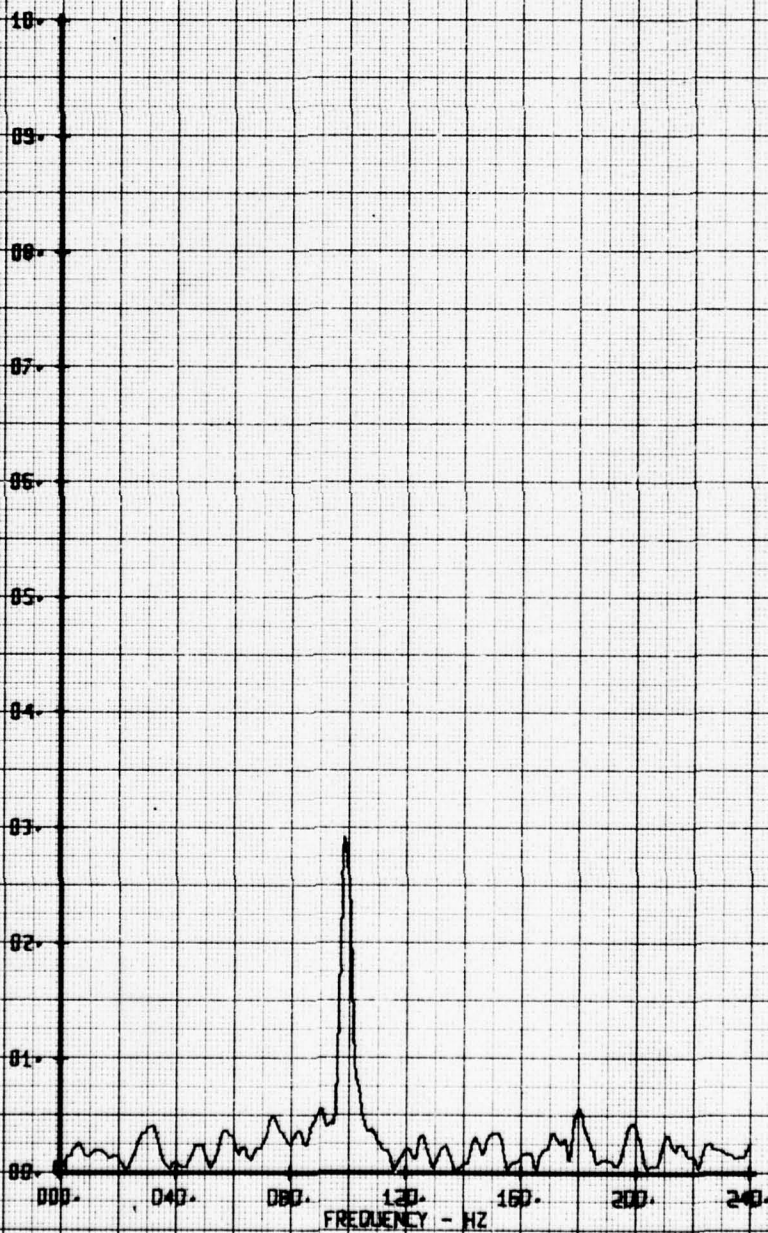
X-2 VELOCITY COMPONENT V-BETA FRS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 175 TP 4

LEGEND
CH PARAMETER
65 V-BETA

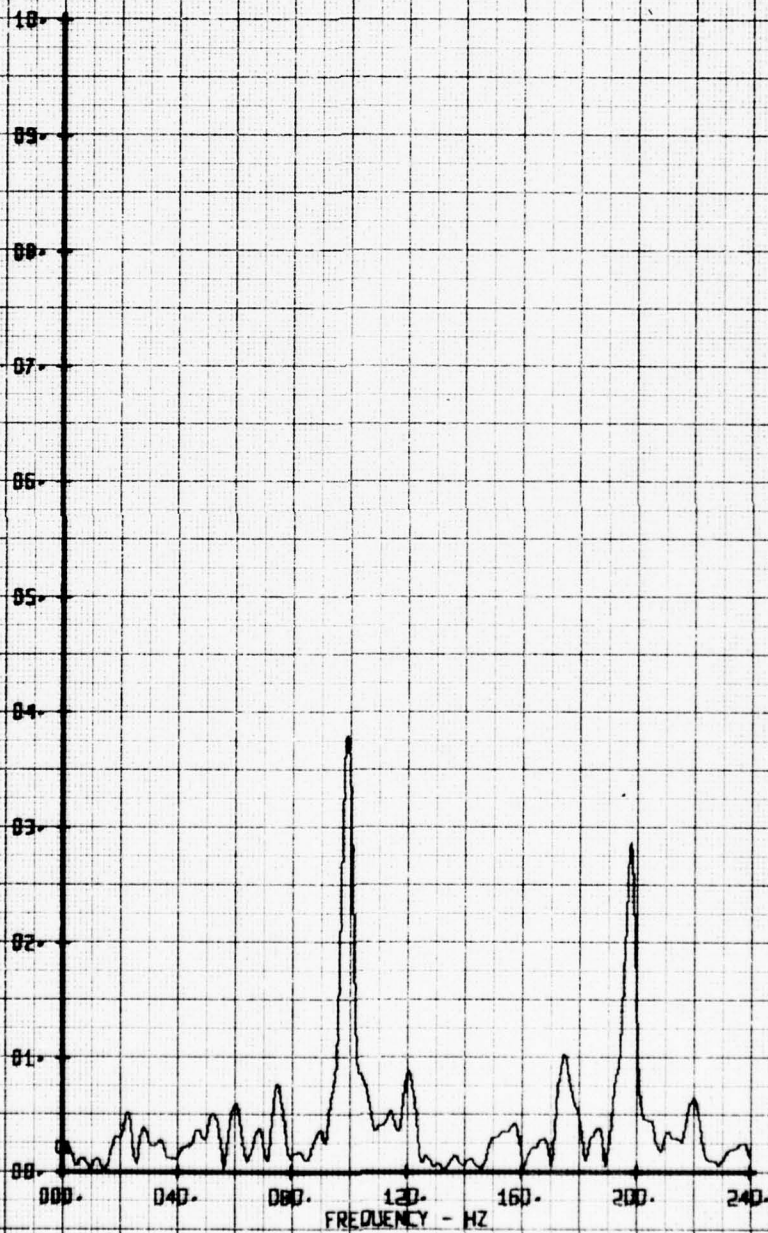
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECTOR W/C SHROUD-150 PSI
RUN 176 TP 5

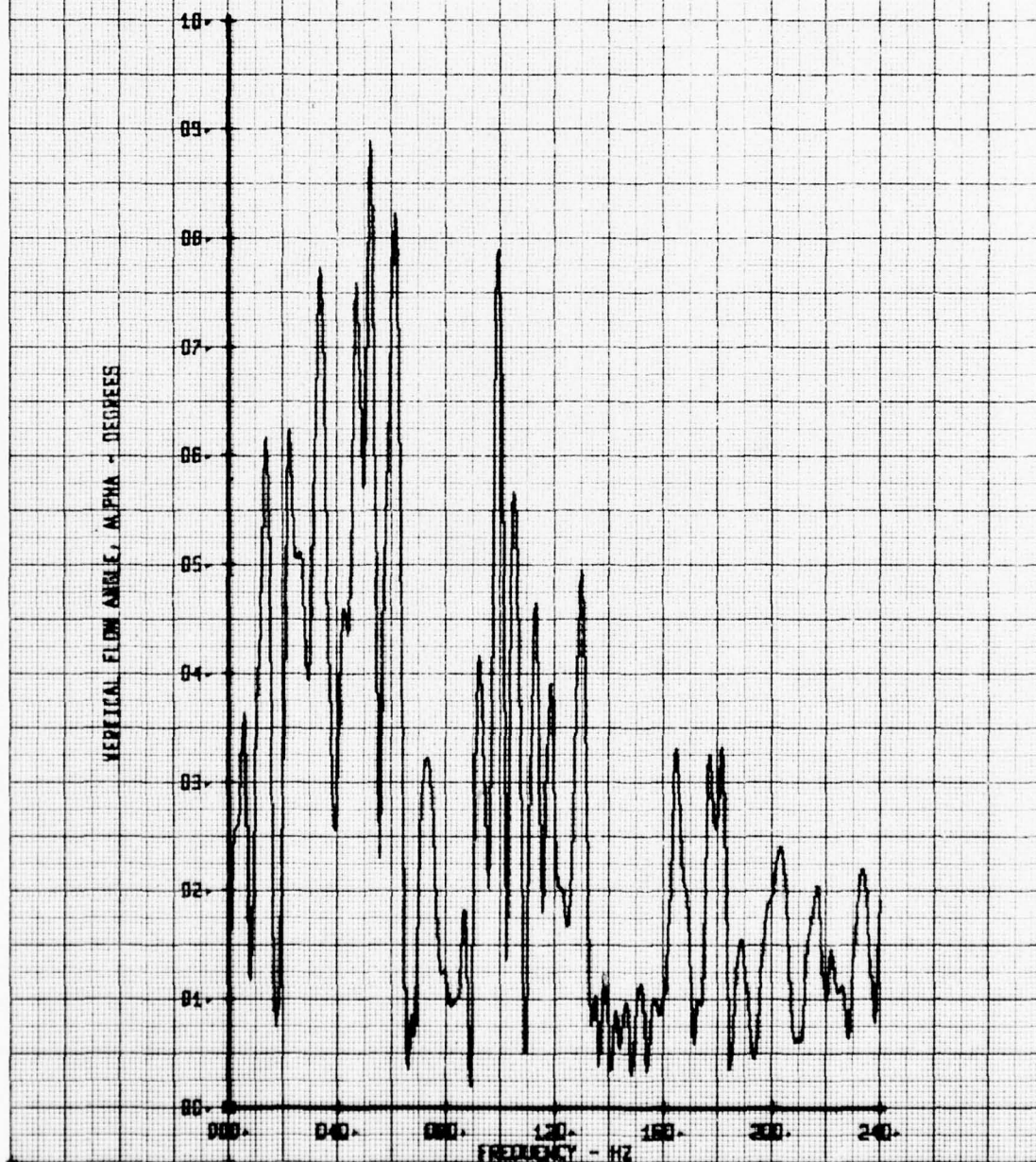
LEGEND
CH 65
PARAMETER
V-BETA

X-Z VELOCITY COMPONENT V-BETA FHS



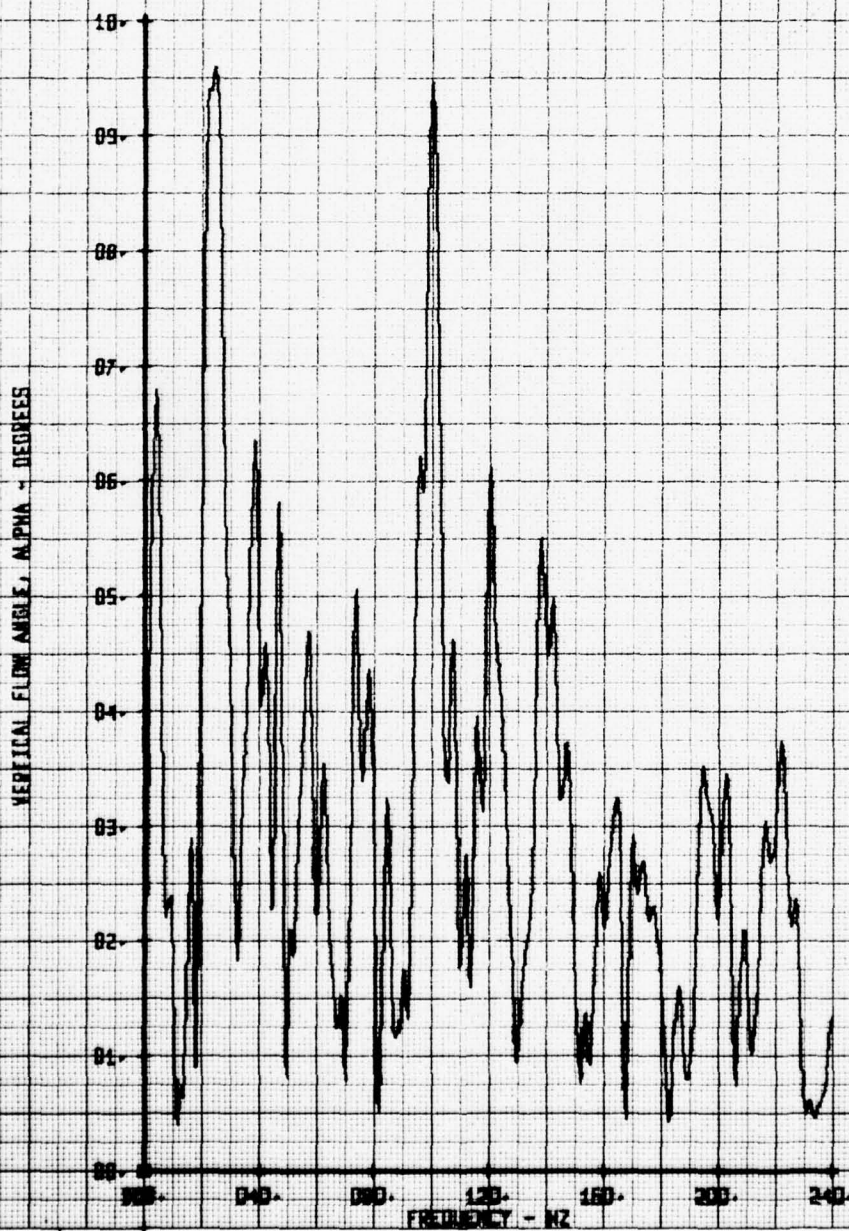
HOT FILM WAKE FREQUENCY ANALYSIS
AIR ECT. WTC SHRO. W- LTP 40PSI
RUN 184 TP 2

LEGEND
CH 66
PARAMETER ALPHA



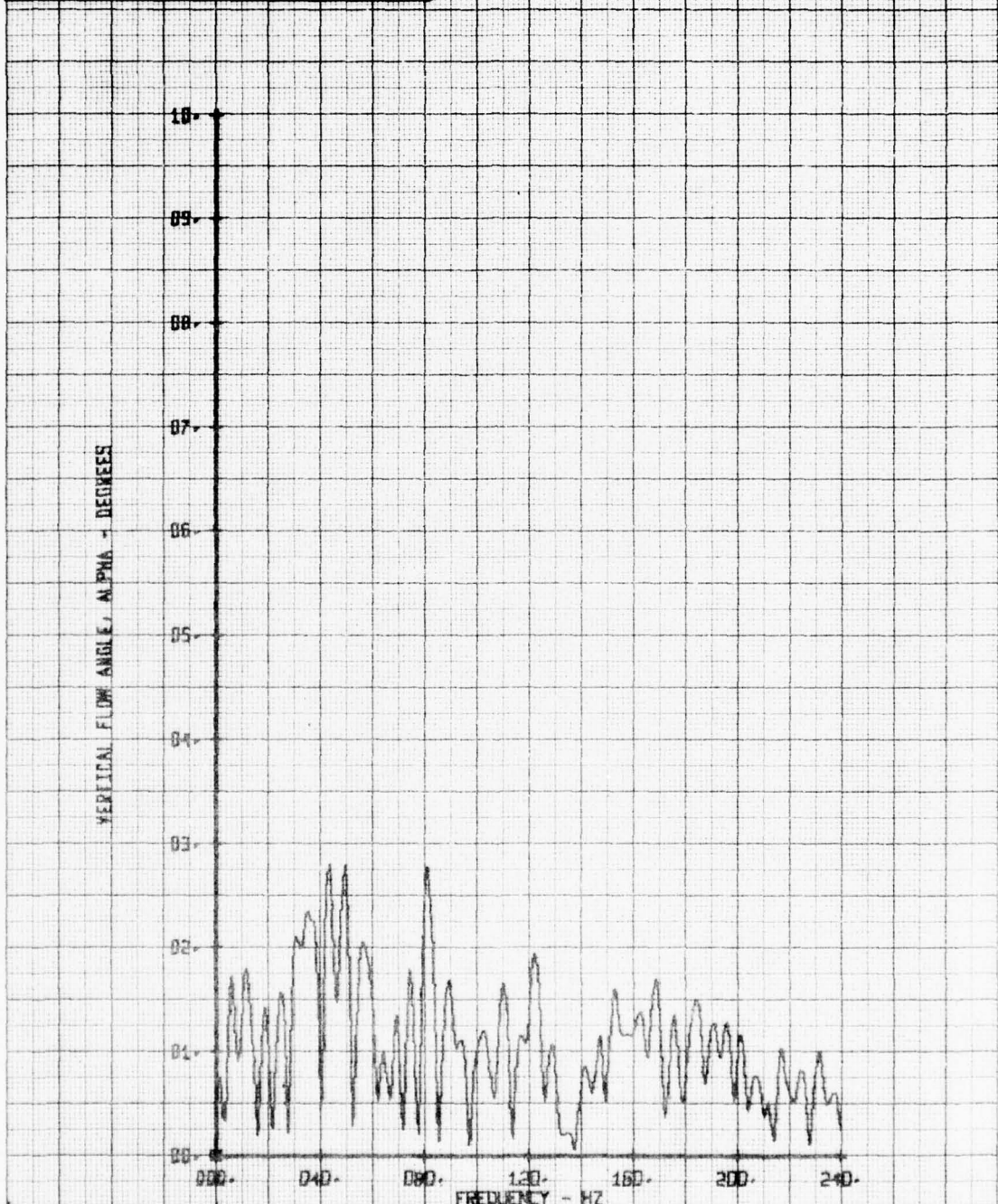
HOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECT. W/C SHRO. W. 1 IP 40PSI
RUN 184 TP 3

LEGEND
CH PARAMETER
66 ALPHA



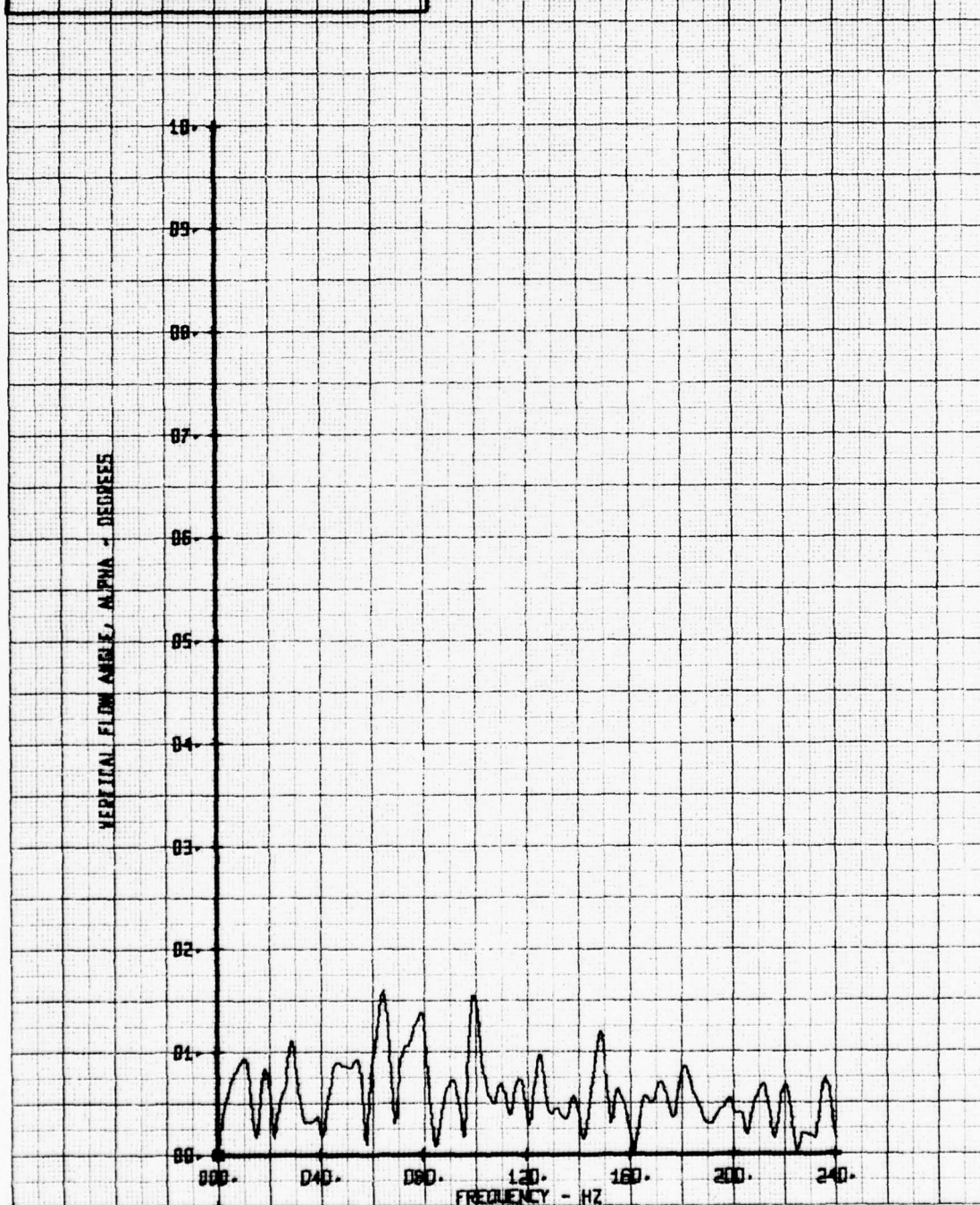
HOT FILM WAKE FREQUENCY ANALYSIS
AIR FCT. WTC 5880. W. 1 TP 40957
RUN 184 TP 4

LEGEND
CH 66
PARAMETER
ALPHA



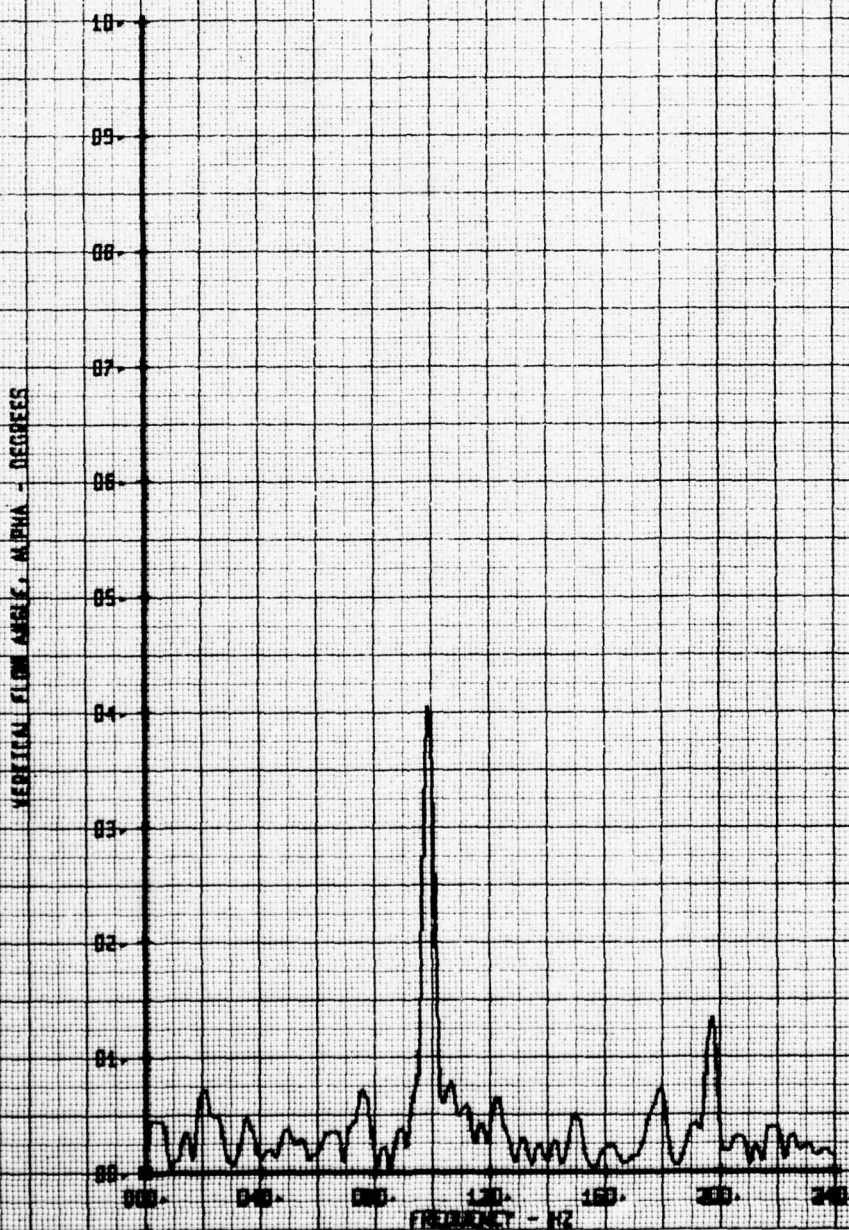
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. WTC 580. W. 1 TP 40PST
RUN 184 TP 5

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECT. W/C SHRD. W. 1 IP 40PST
RUN 184 YP 6

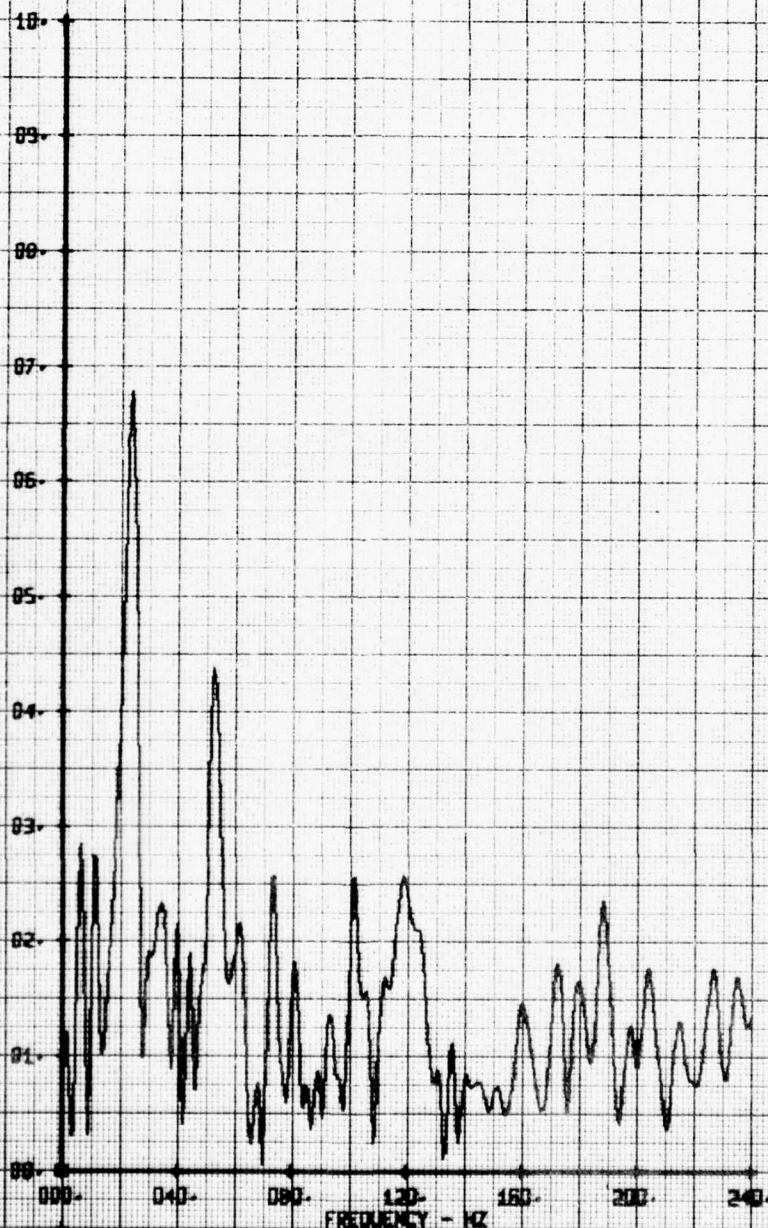
LEGEND
CH 66
PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/ C SHRO. W. 1 TP 40PSI
RUN 1B4 TP 2

LEGEND
CH 65
PARAMETER
BETA

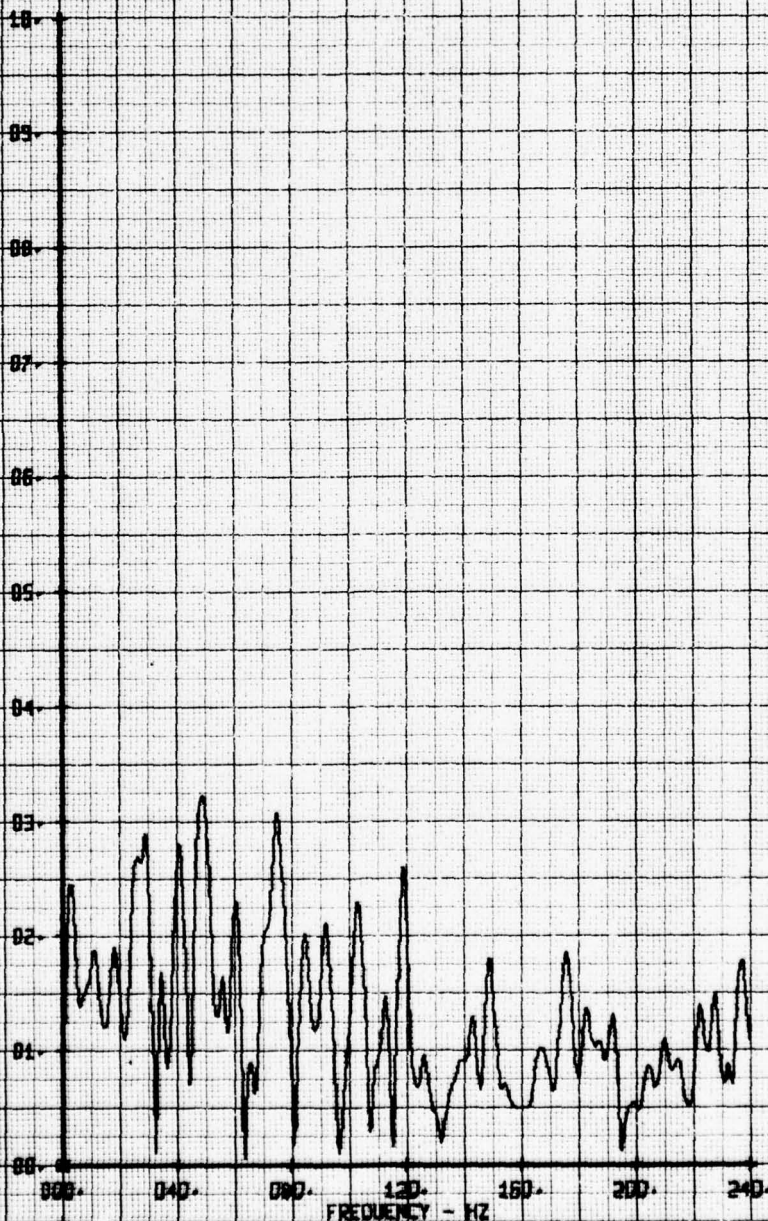
LATERAL FLOW ANGLE, BETA - DEGREES



MIT FILM WAVE FREQUENCY ANALYSIS
AIR F.I.T. W.C. SNED. W. L.F. 40PST
RUN 104 TP 3

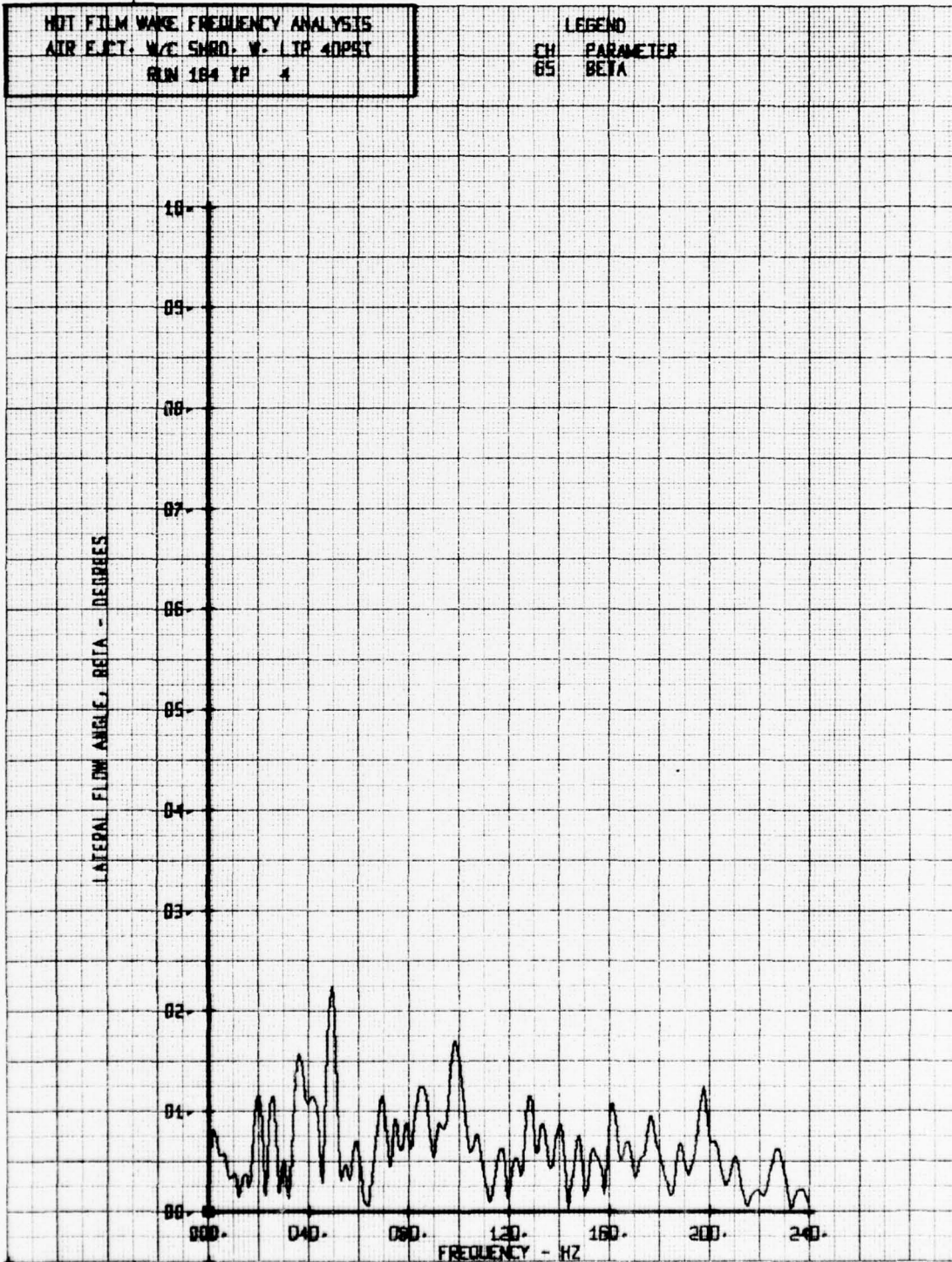
LEGEND
CH PARAMETER
05 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR ECT. W/C 5MRD. W. IP 40PST
RUN 184 IP 4

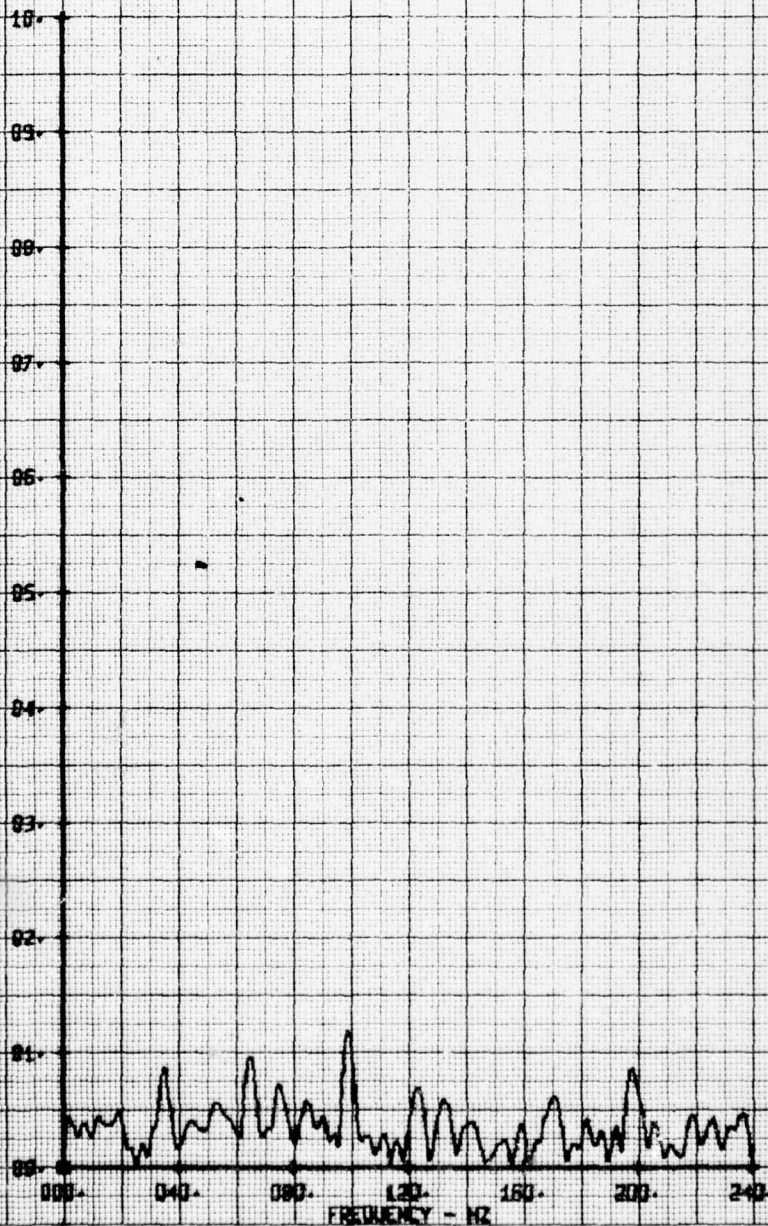
LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR ECT. W/T 5MRD. W. 1 TP 40P97
RUN 184 TP 5

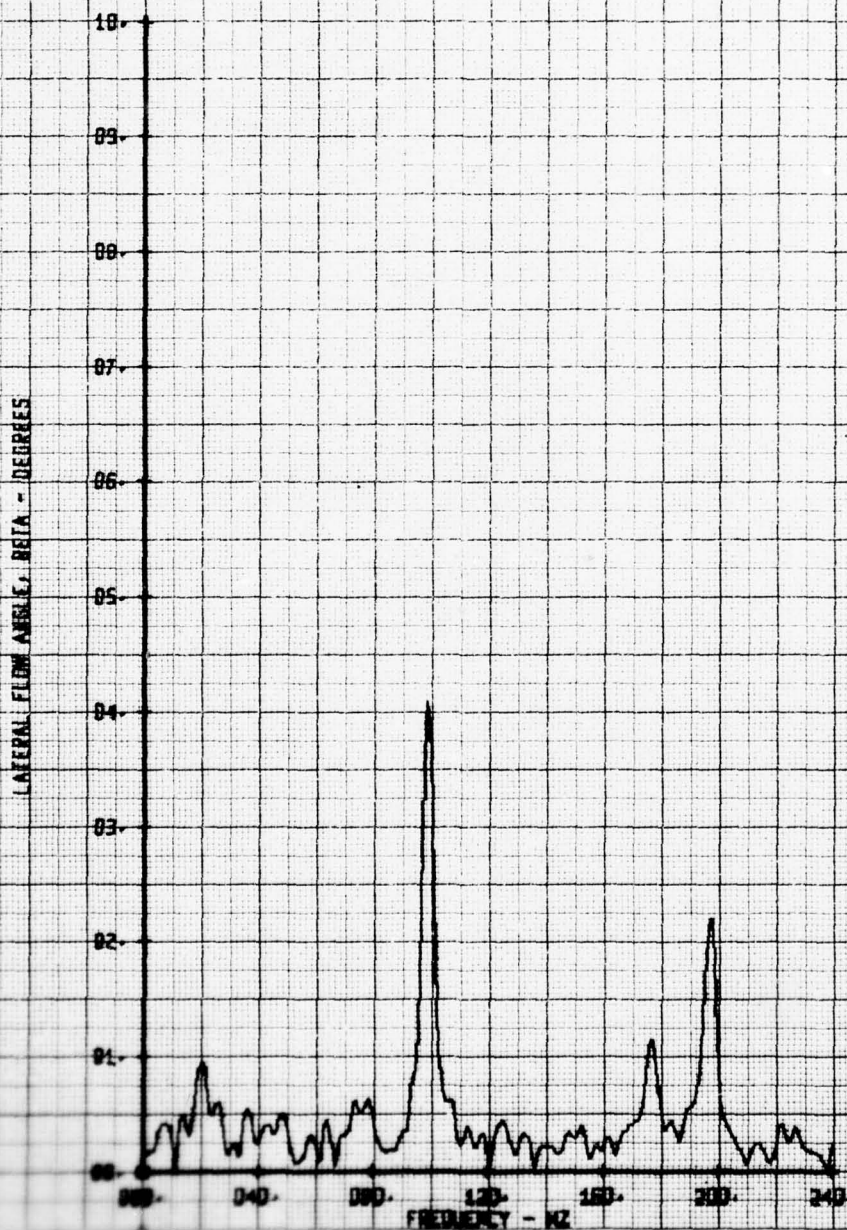
LEGEND
CH - PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



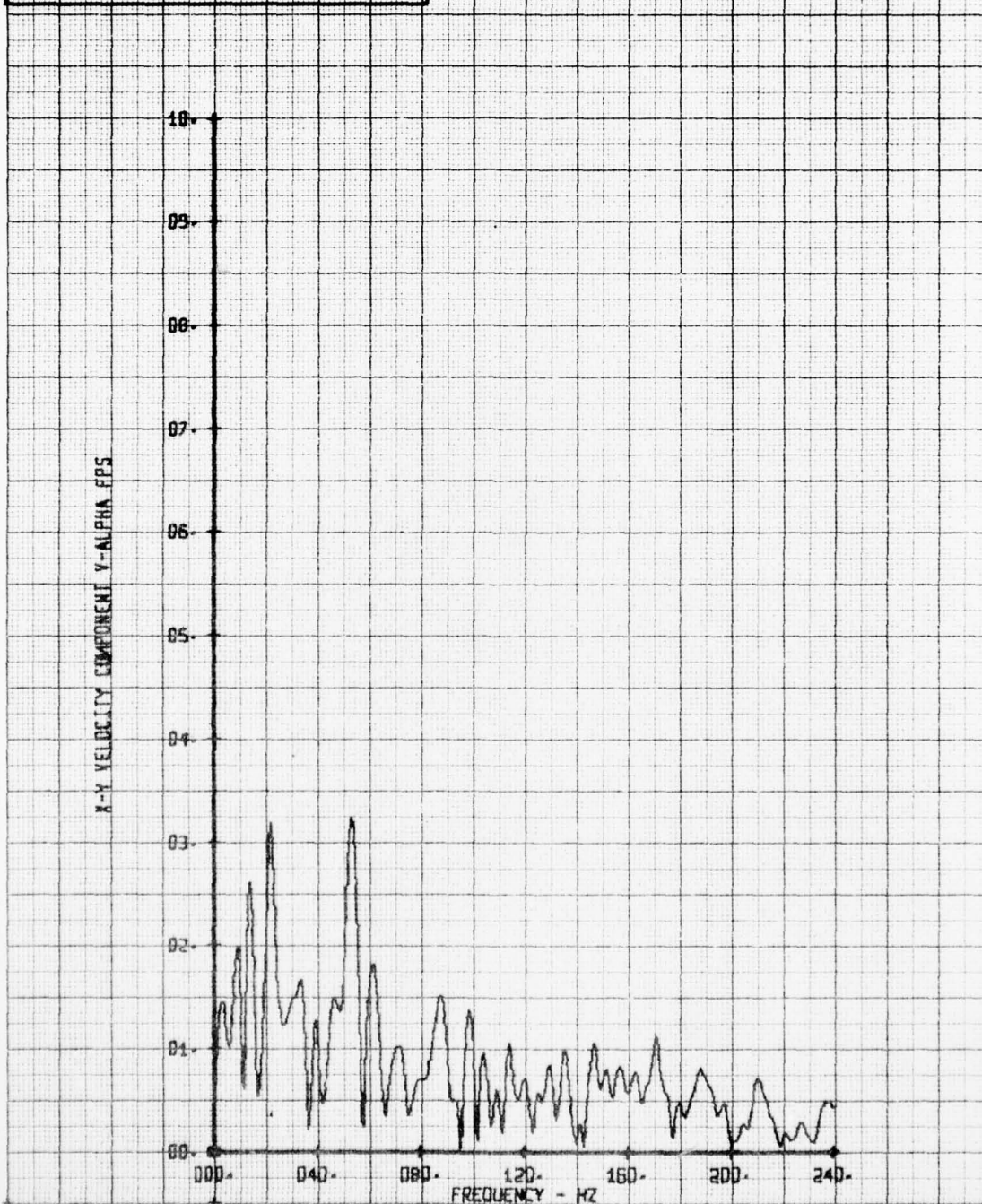
HOT FILM WIRE FREQUENCY ANALYSIS
ATR E.C.T. W.C. SHRO. W. LIP 40PSI
RUN 184 TP 6

LEGEND
CH 65
PARAMETER
BETA



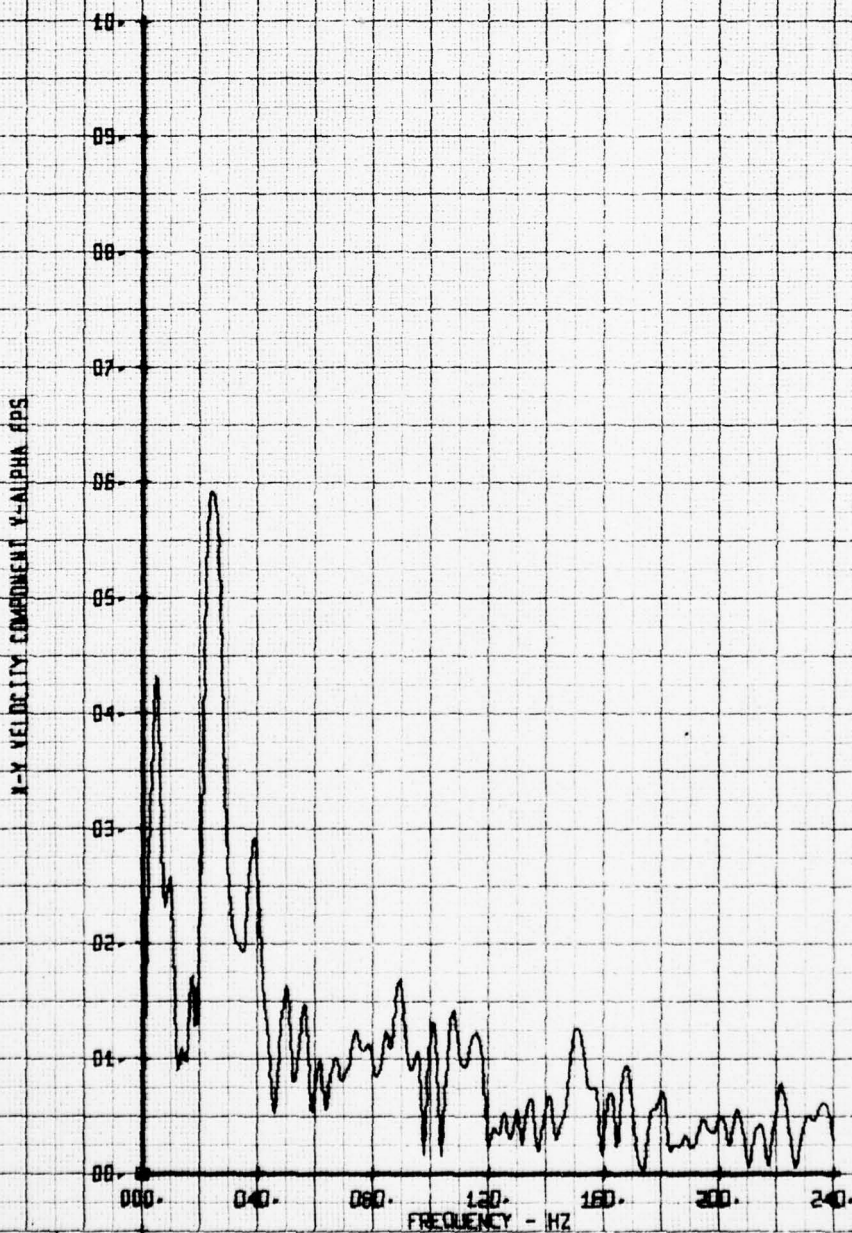
HOT FILM WAKE FREQUENCY ANALYSIS
 AIR ECT- W/C SHRD- W. 1 TO 40PSI
 RUN 184 TP 2

LEGEND
 CH PARAMETER
 55 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR E.C.T. W/C SHRO. W. (TP 40PST
RUN 184 TP 3

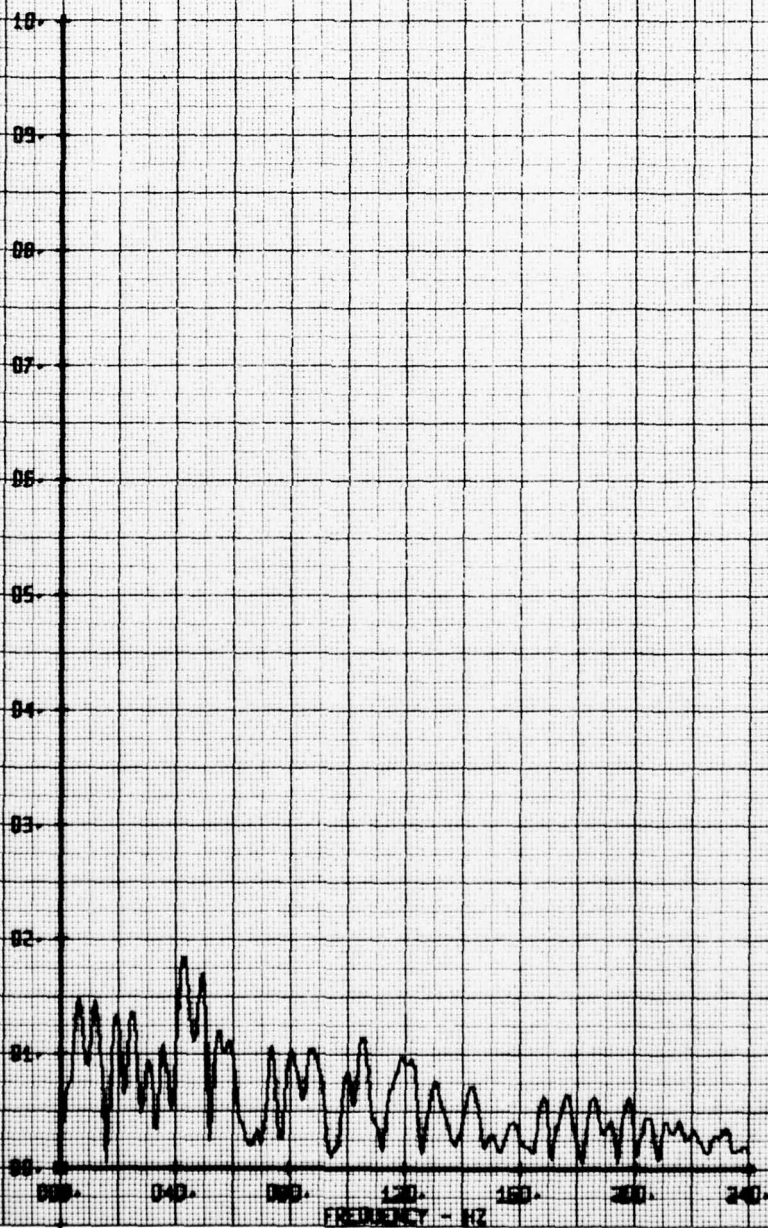
LEGEND
CH. PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR F.C.T. W/C 5420. W. LTP 40PBT
RUN 184 TP 4

LEGEND
CH PARAMETER
66 V-ALPHA

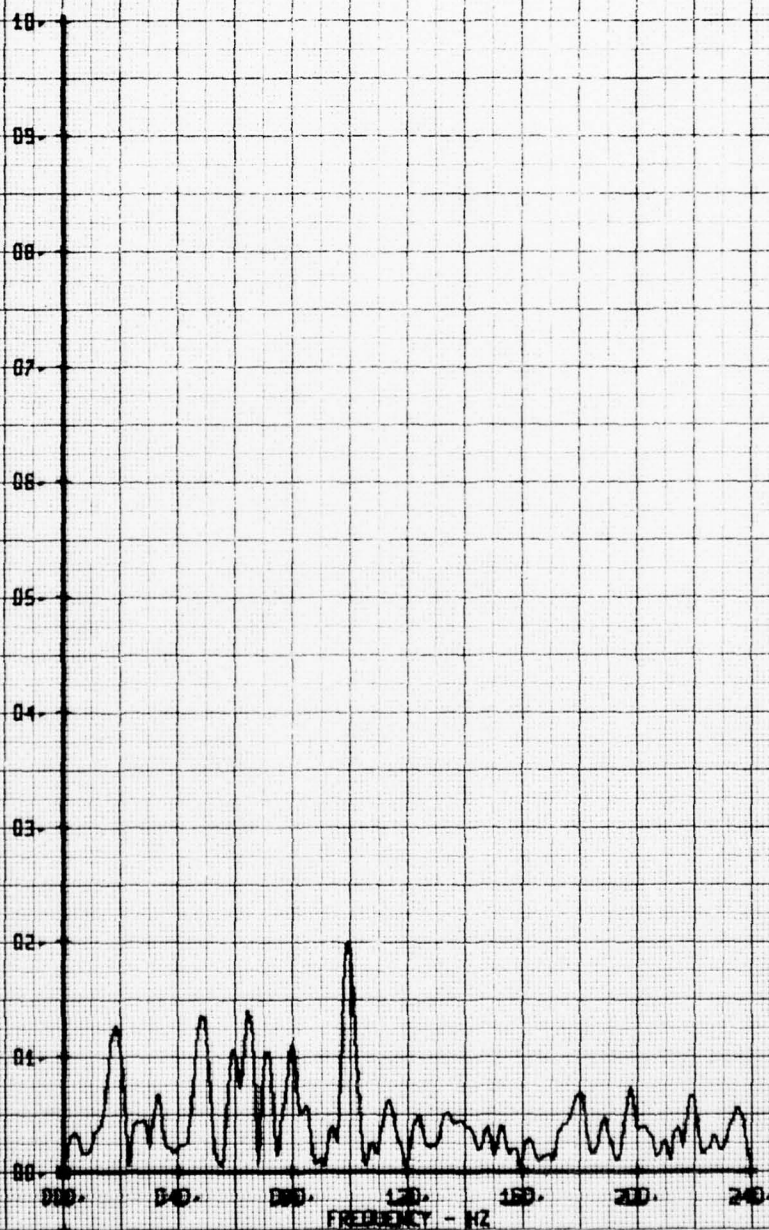
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
 AIR E.C.T. W/C SHRD. W. LIP 40PST
 RUN 184 TP 5

LEGEND
 CH 66 PARAMETER
 V-ALPHA

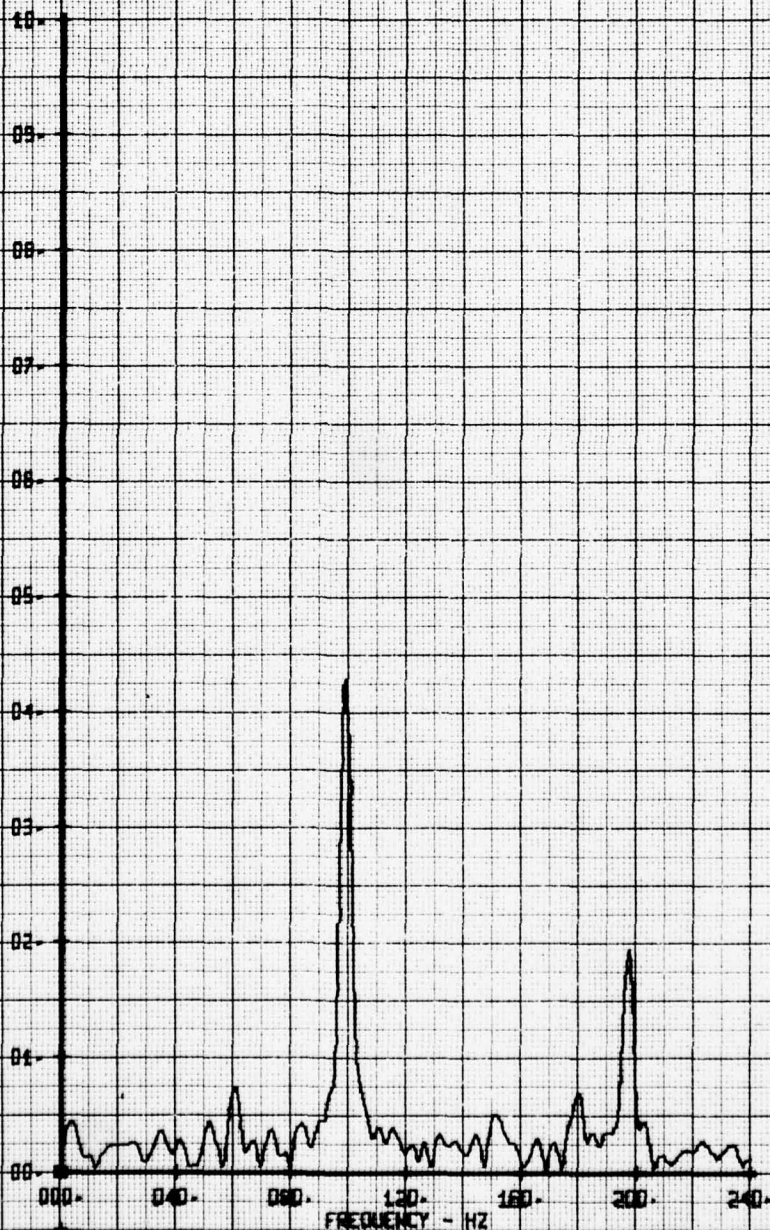
X-Y VELOCITY COMPONENT V-ALPHA RPS



HOT FILM WIRE FREQUENCY ANALYSIS
 AIR E-CT. W/C SHRD. V. LTP 40PST
 RUN 184 TP. 8

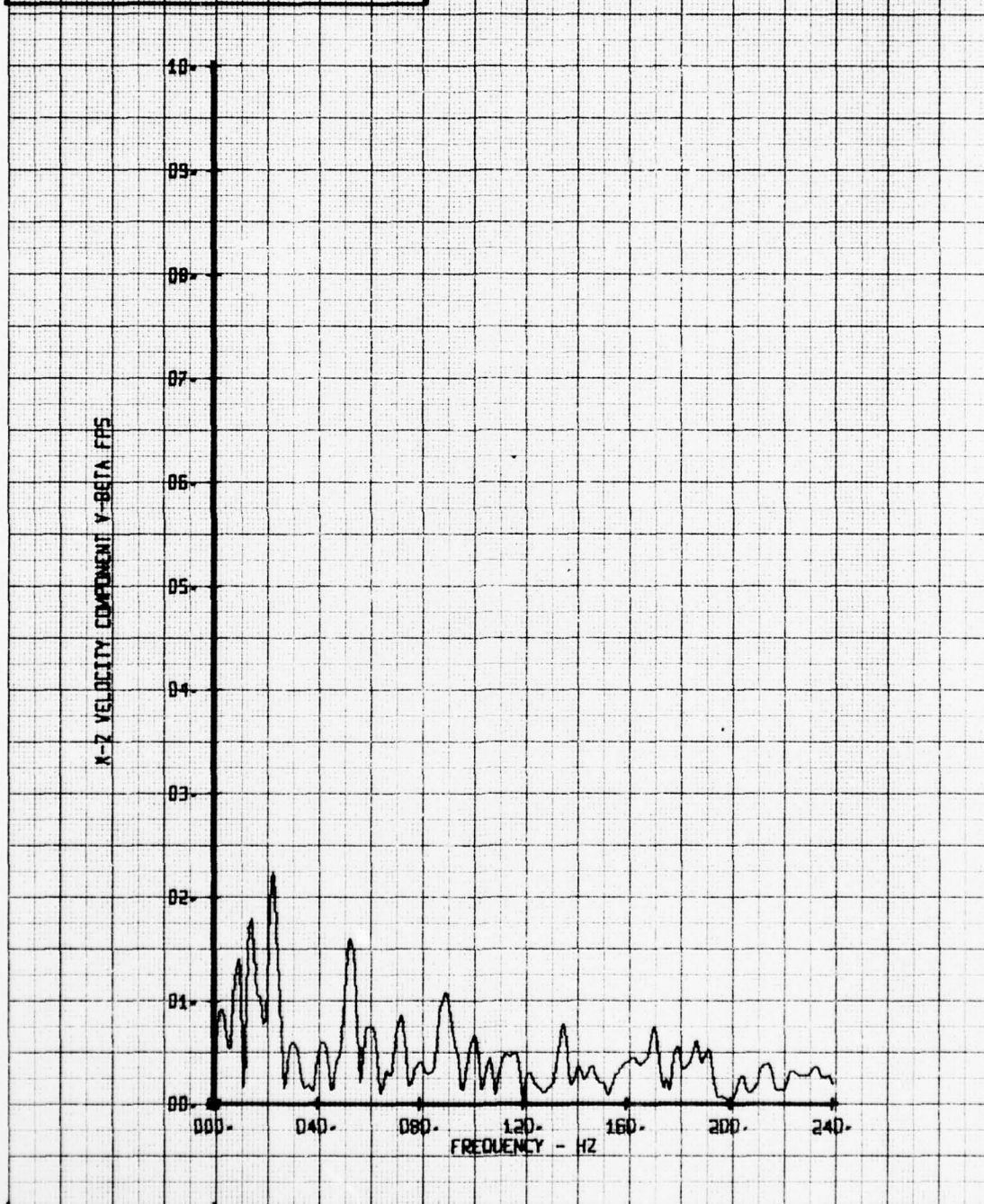
LEGEND
 CH PARAMETER
 06 V-ALPHA

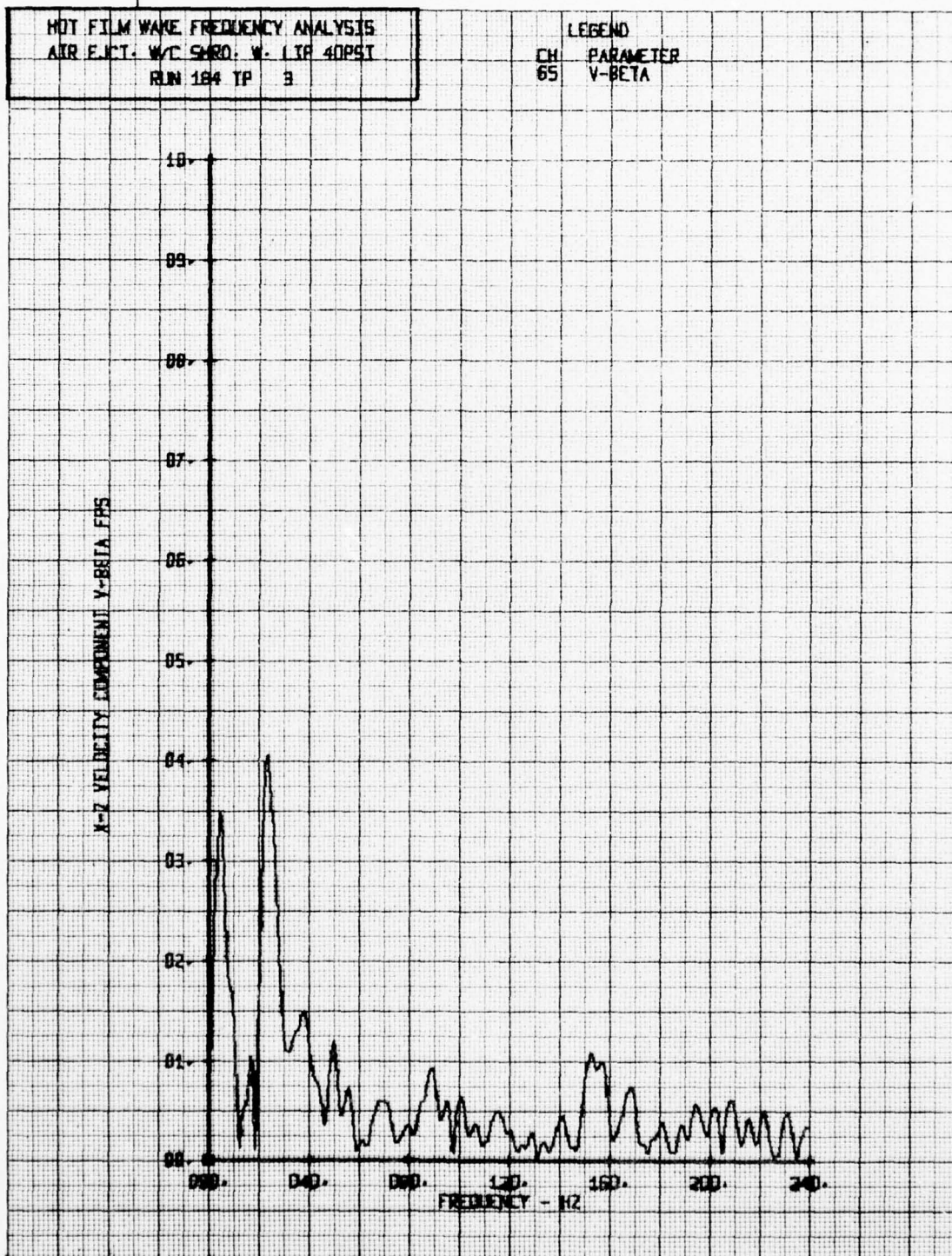
X-Y VELOCITY COMPONENT V-ALPHA EPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FCT. W/ SHRO. W. 1 TP 40PSI
RUN 184 TP 2

LEGEND
CH 05
PARAMETER
V-BETA

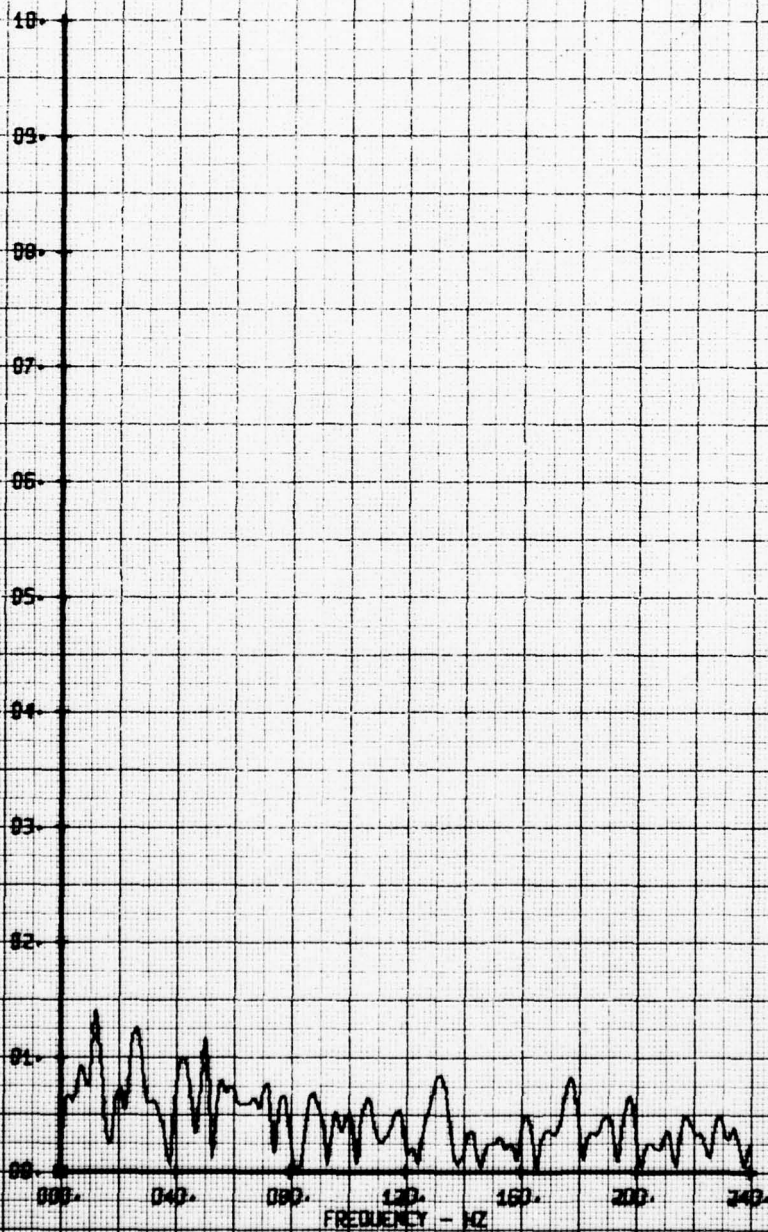




HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRD. W. 1 IP 40PSI
RUN 184 TP 4

LEGEND
CH PARAMETER
65 V-BETA

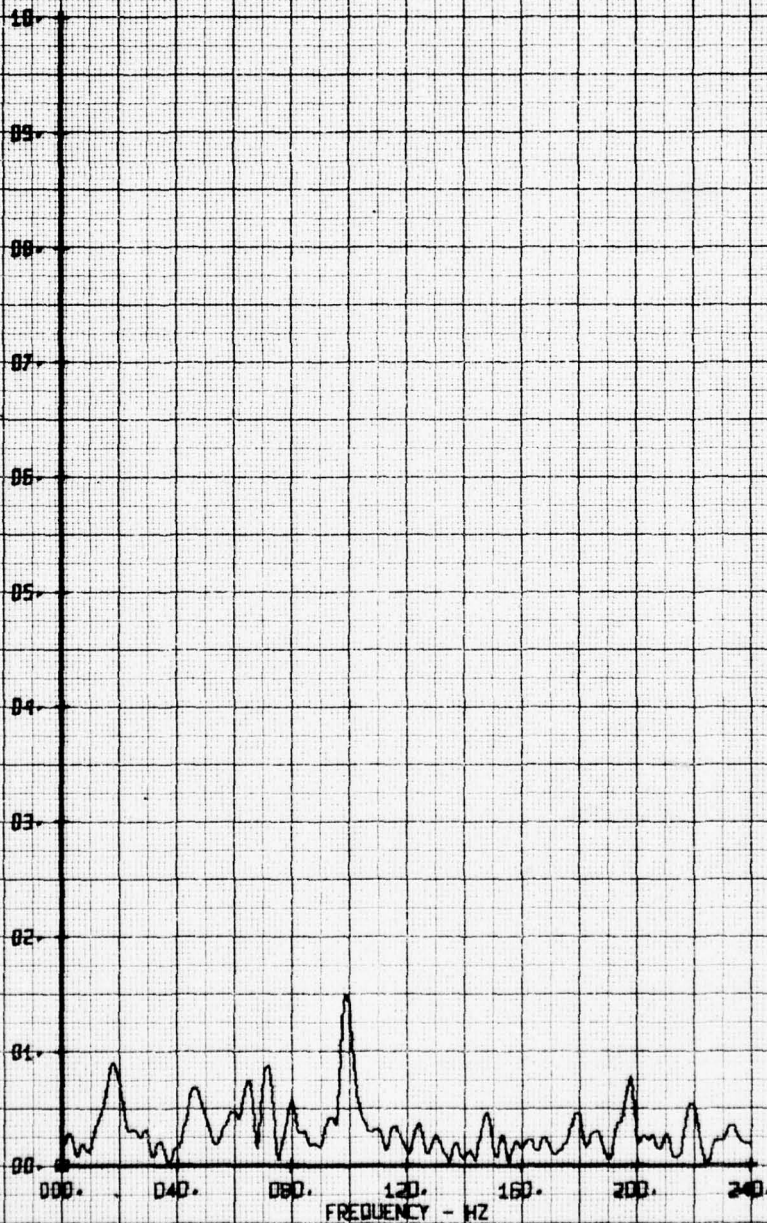
A-2 VELOCITY COMPONENT V-BETA FPS



NOT FILM WAVE FREQUENCY ANALYSIS
 AIR F.C.T. W.C. SMO. W. 11P 40PST
 RUN 184 YF S

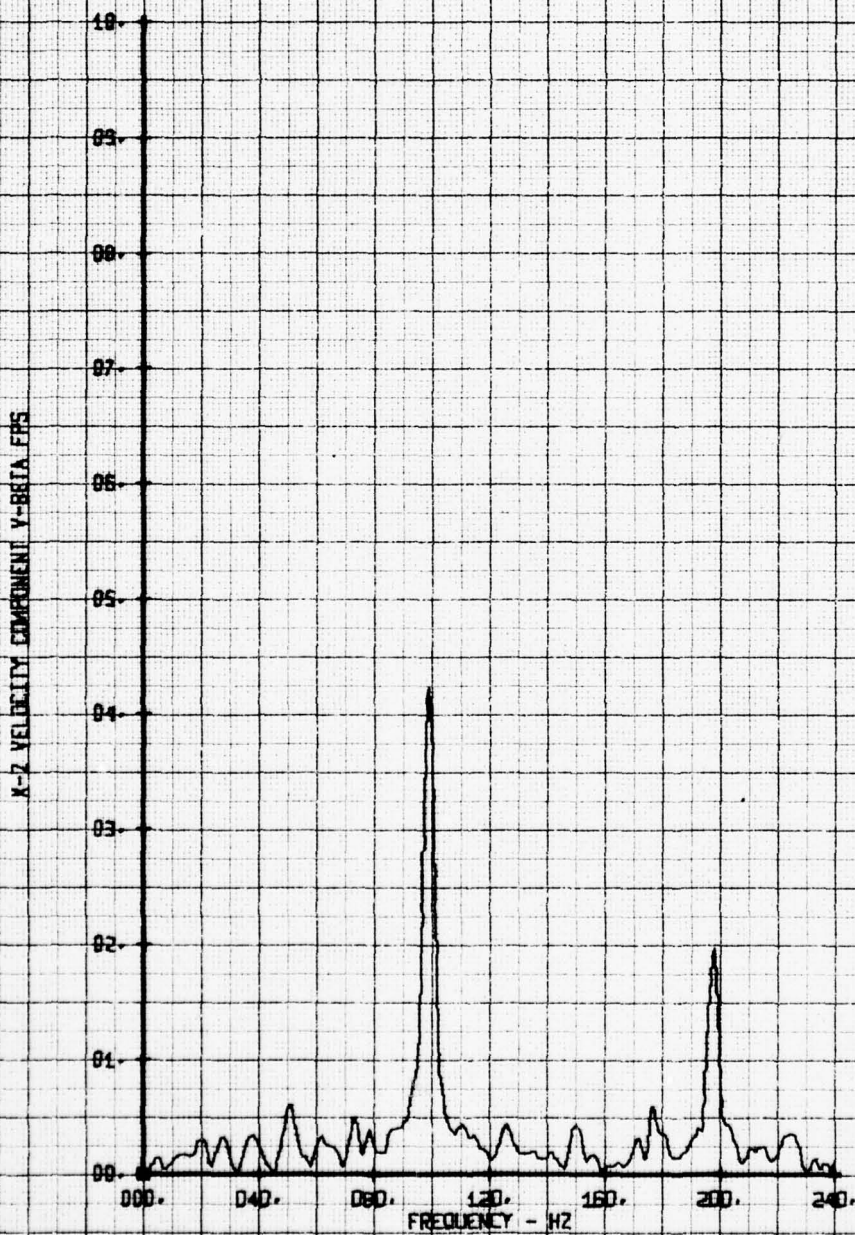
LEGEND
 CH PARAMETER
 05 Y-BETA

X-Z VELOCITY COMPONENT Y-BETA FMS



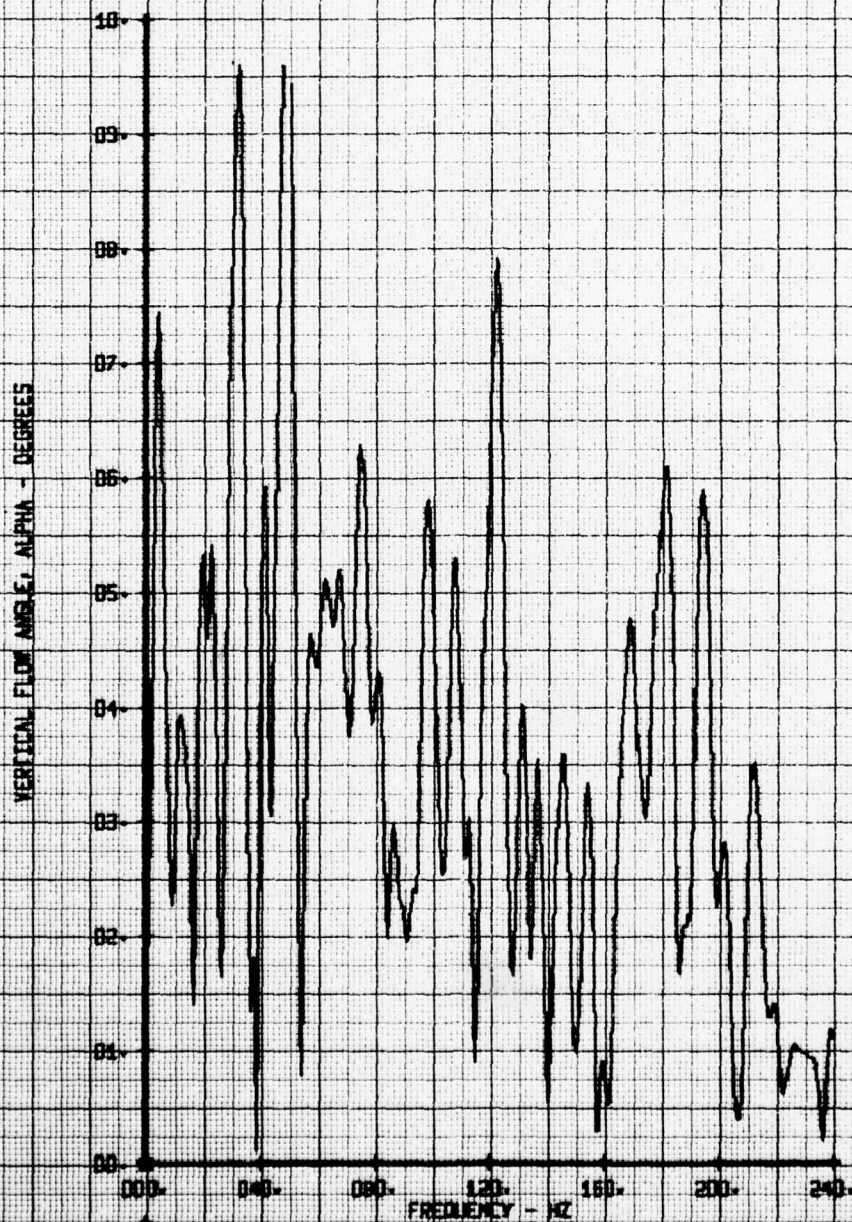
HOT FILM WAKE FREQUENCY ANALYSIS
 AIR EJECT. W/C SHRO. W. LIP 40PSI
 RUN 104 TP 6

LEGEND
 CH 65
 PARAMETER
 V-BETA



NOY FILM WAKE FREQUENCY ANALYSIS
ATR F.C.T. W/C SHRD. W. LTP 150RST
RUN 185 TP 1

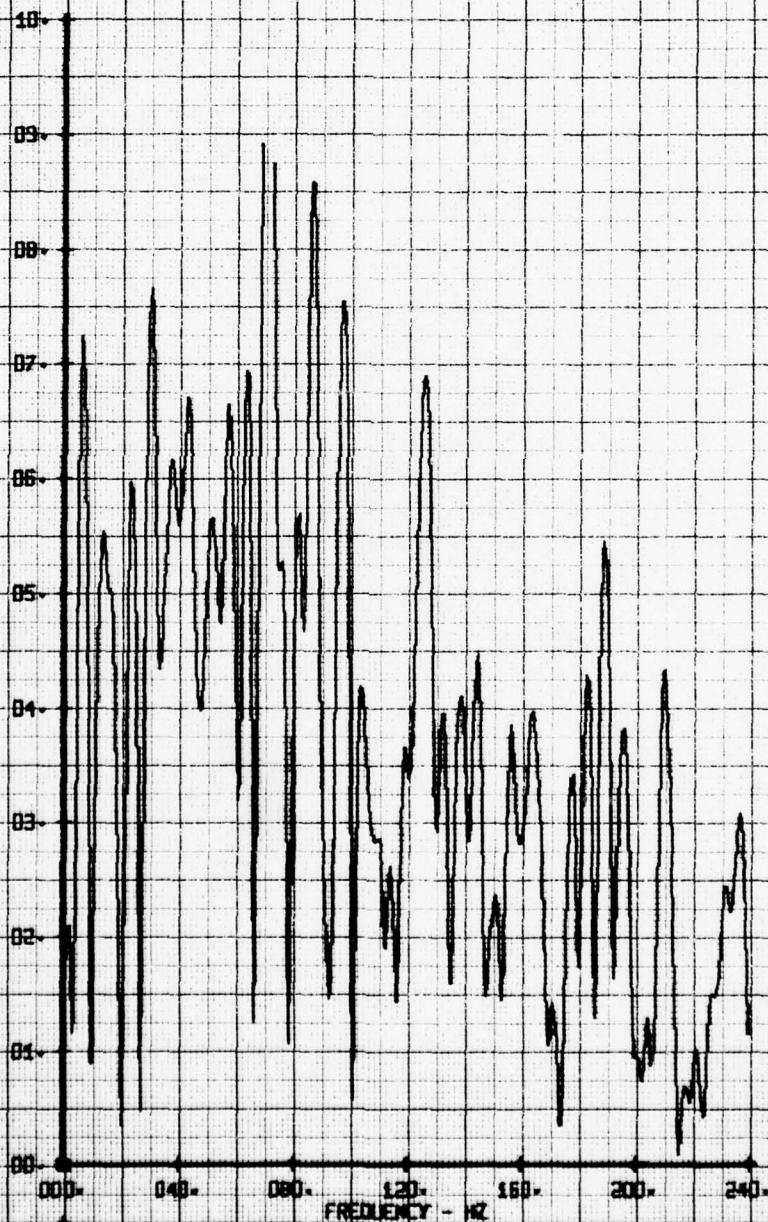
LEGEND
CH PARAMETER
55 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR E.C.T. W.T. SHRD. W. LTP 150PST
RUN 185 TP 2

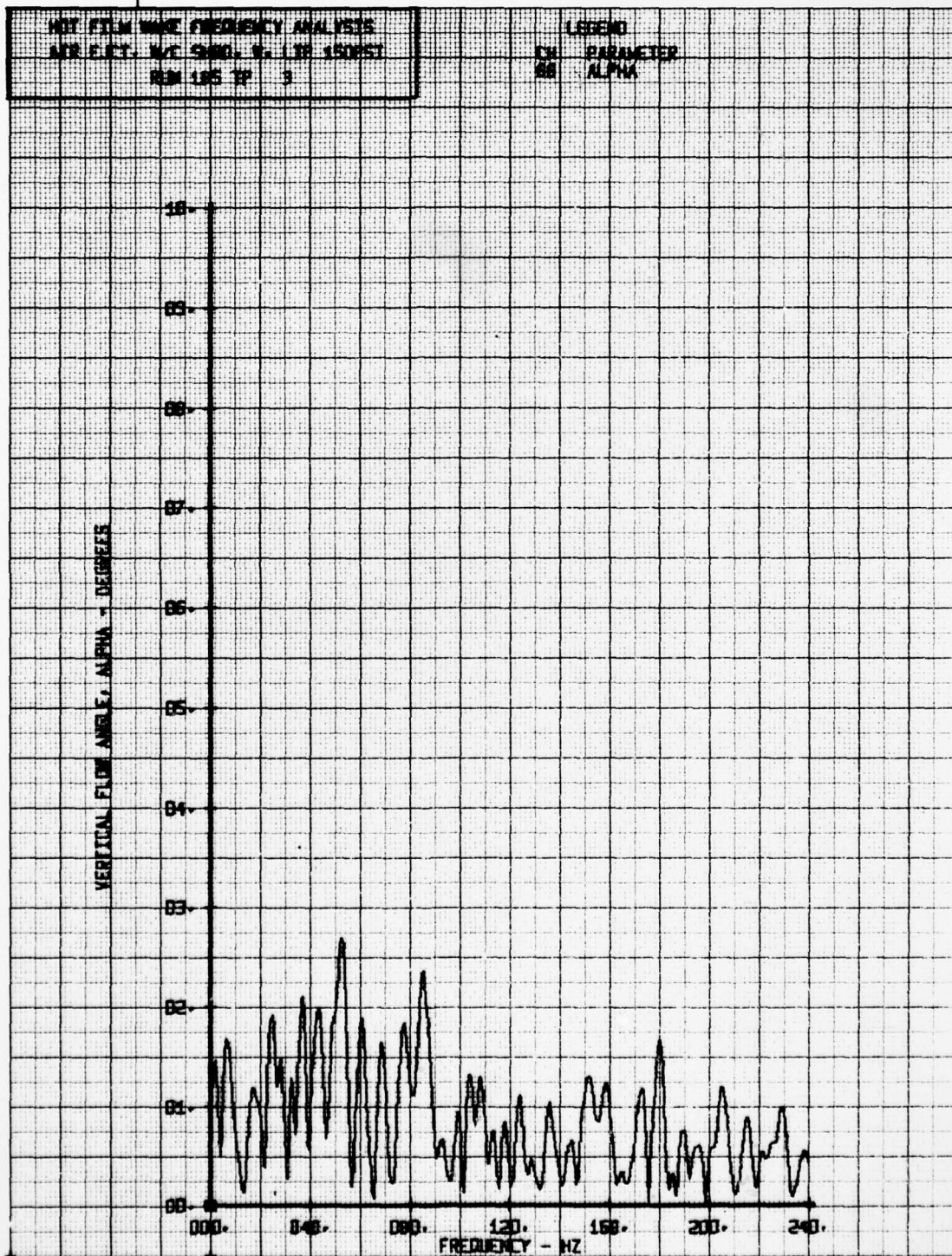
LEGEND
CH PARAMETER
55 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOI FILM WAVE FREQUENCY ANALYSIS
AIR FCT. MT 500. 9. 10 150PST
REM 195 IF 3

LEGEND
CH PARAMETER
BB ALPHA



AD-A062 590

BOEING VERTOL CO PHILADELPHIA PA
INTERACTIONAL AERODYNAMICS OF THE SINGLE ROTOR HELICOPTER CONF--ETC(U)
SEP 78 P F SHERIDAN

F/G 1/3

DAAJ02-77-C-0020

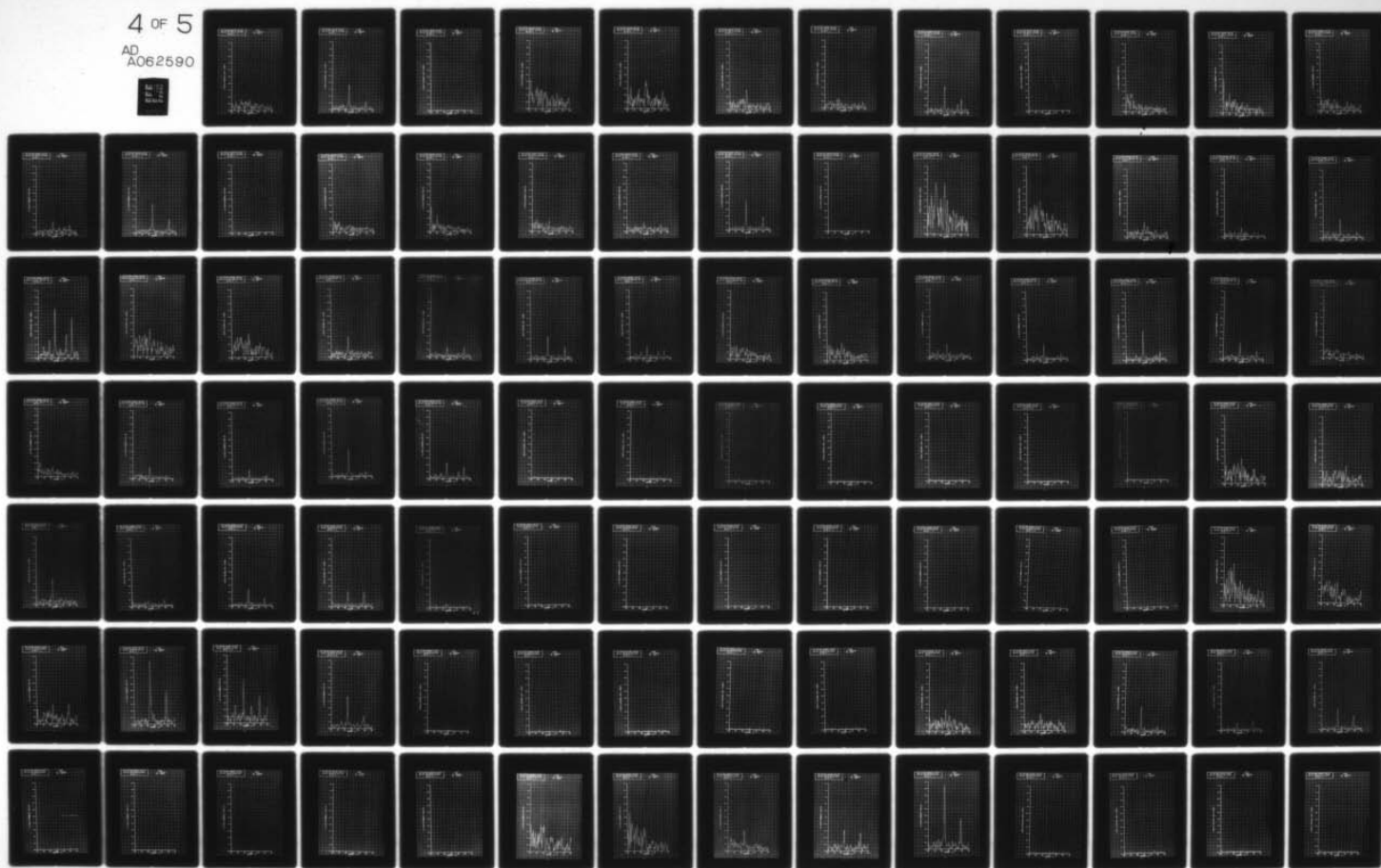
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4 of 5

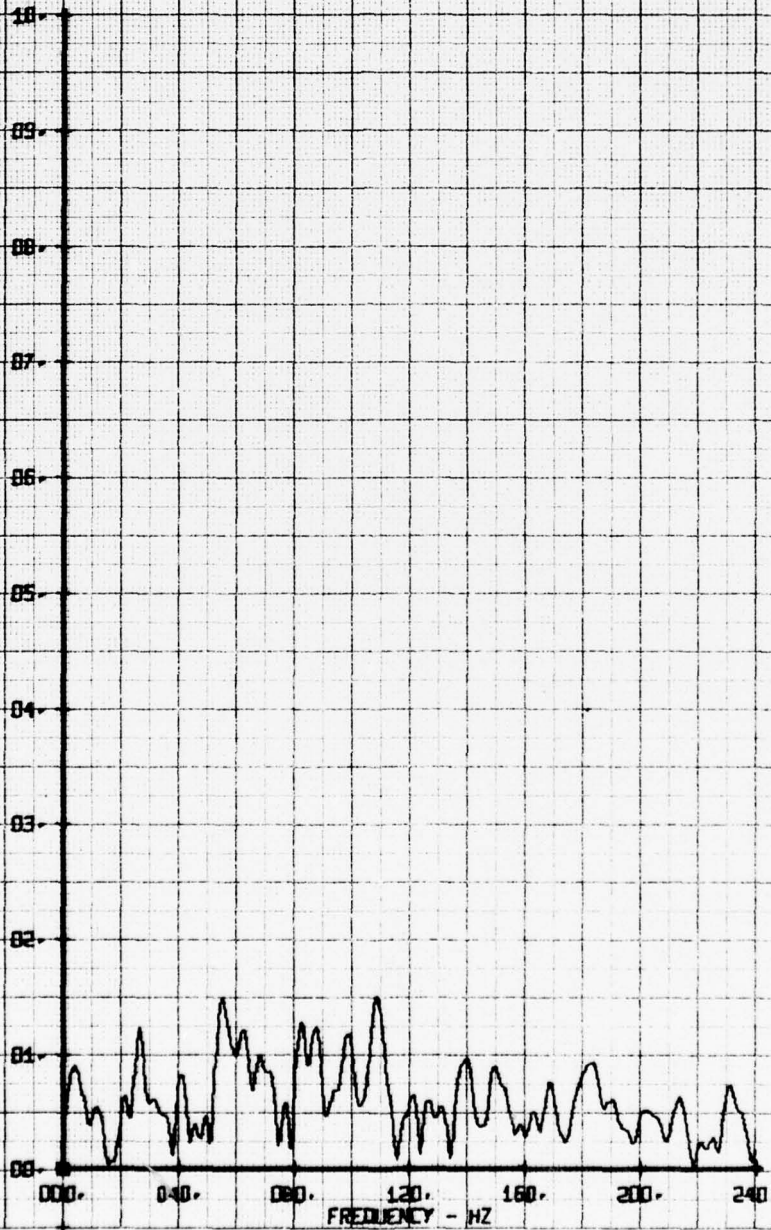
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AIR F.E.T. W/C 5400. W. 1P 150PST
RIM 185 TP 4

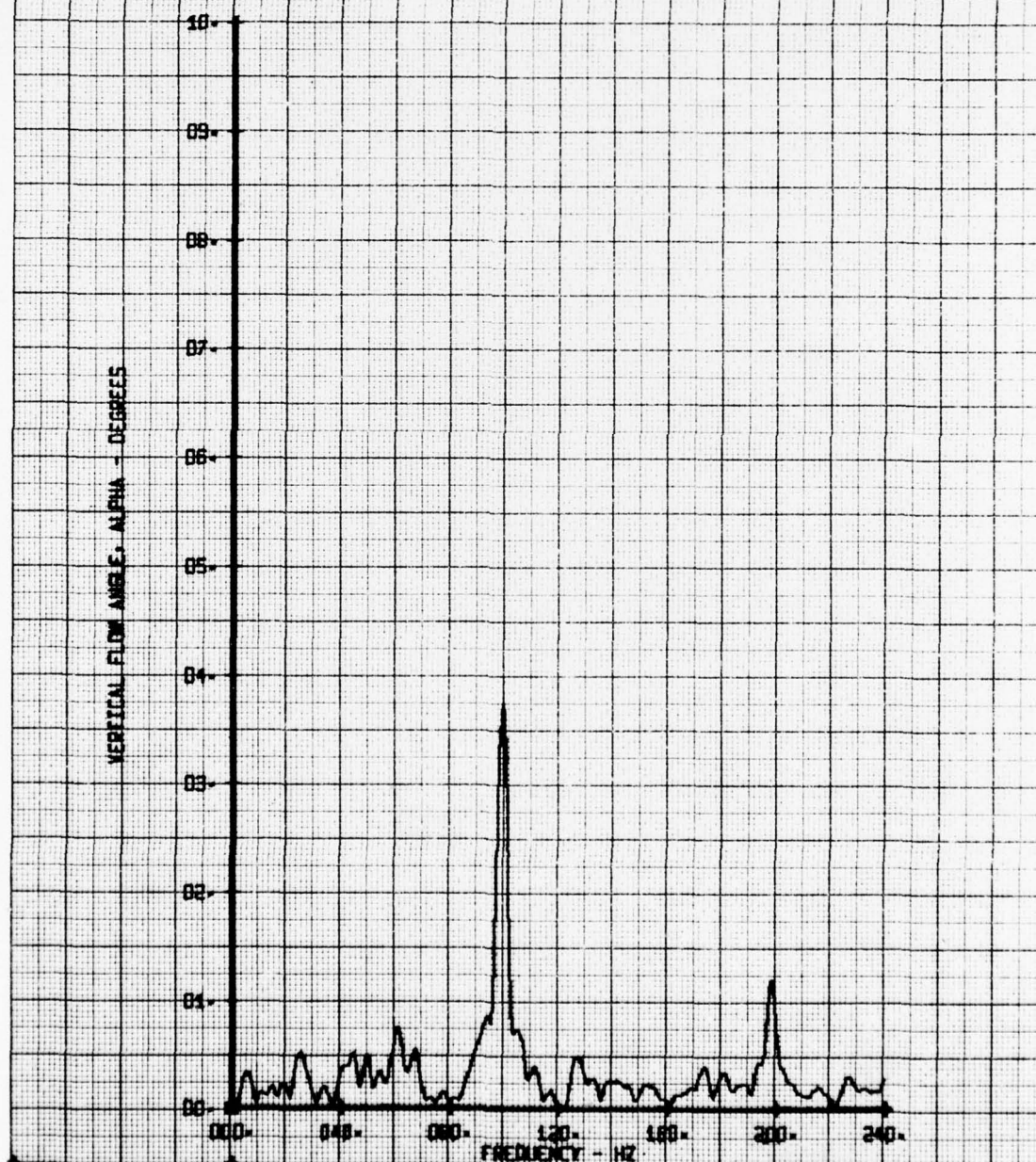
LEGEND
CH 68
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
ATR E.C.T. W/T SHRO. W. LTP 150PST
RUN 185 TP 5

LEGEND
CH PARAMETER
66 ALPHA

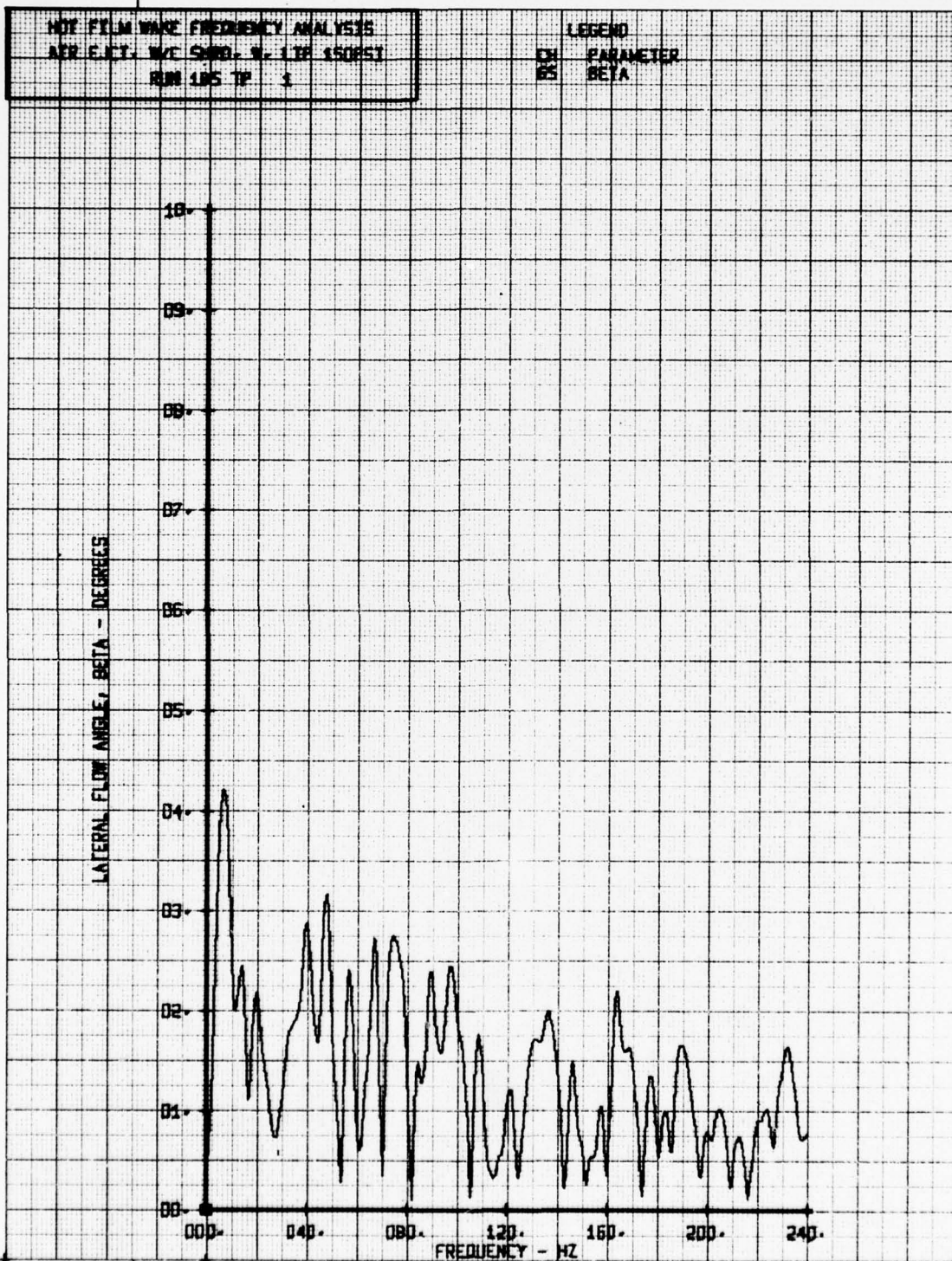


HOT FILM WAKE FREQUENCY ANALYSIS
ATR E.C.T. W.T. SIRD. W. LTP 150P51
RUN 185 TP 7

LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE - ALPHA - DEGREES

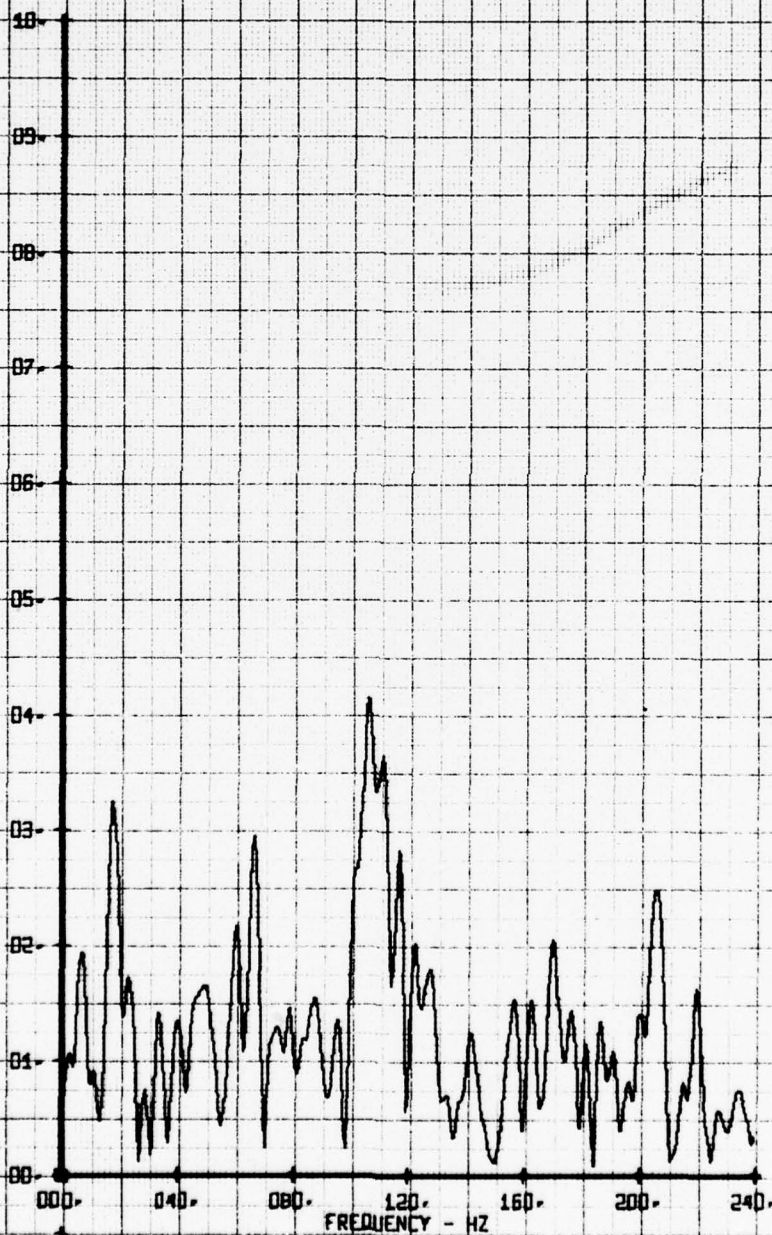
FREQUENCY - HZ



HOT FILM WAKE FREQUENCY ANALYSIS
ATM ECT. W/T 5400. W. 1 TP 150PST
RUN 185 TP 2

LEGEND
CH 65 PARAMETER
BETA

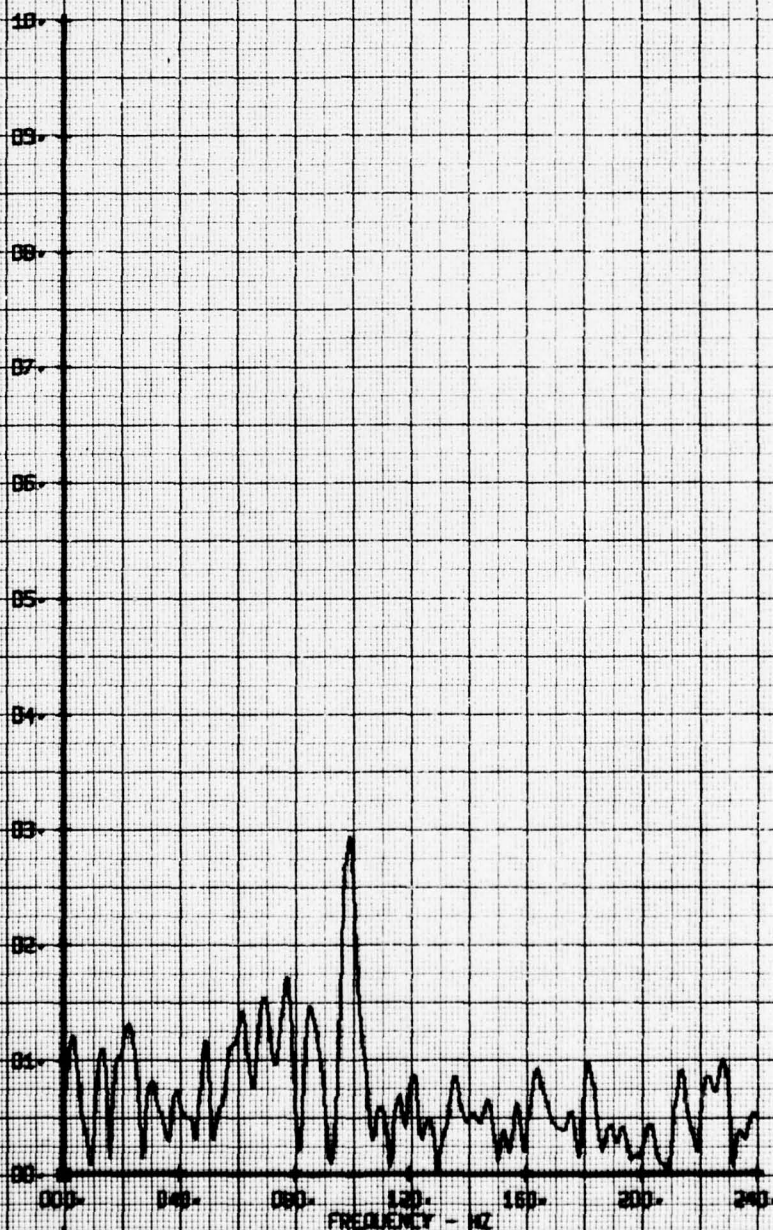
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
AER. E. CT. W/T SHED. W. 1 TR 150R51
RUN 185 TP 3

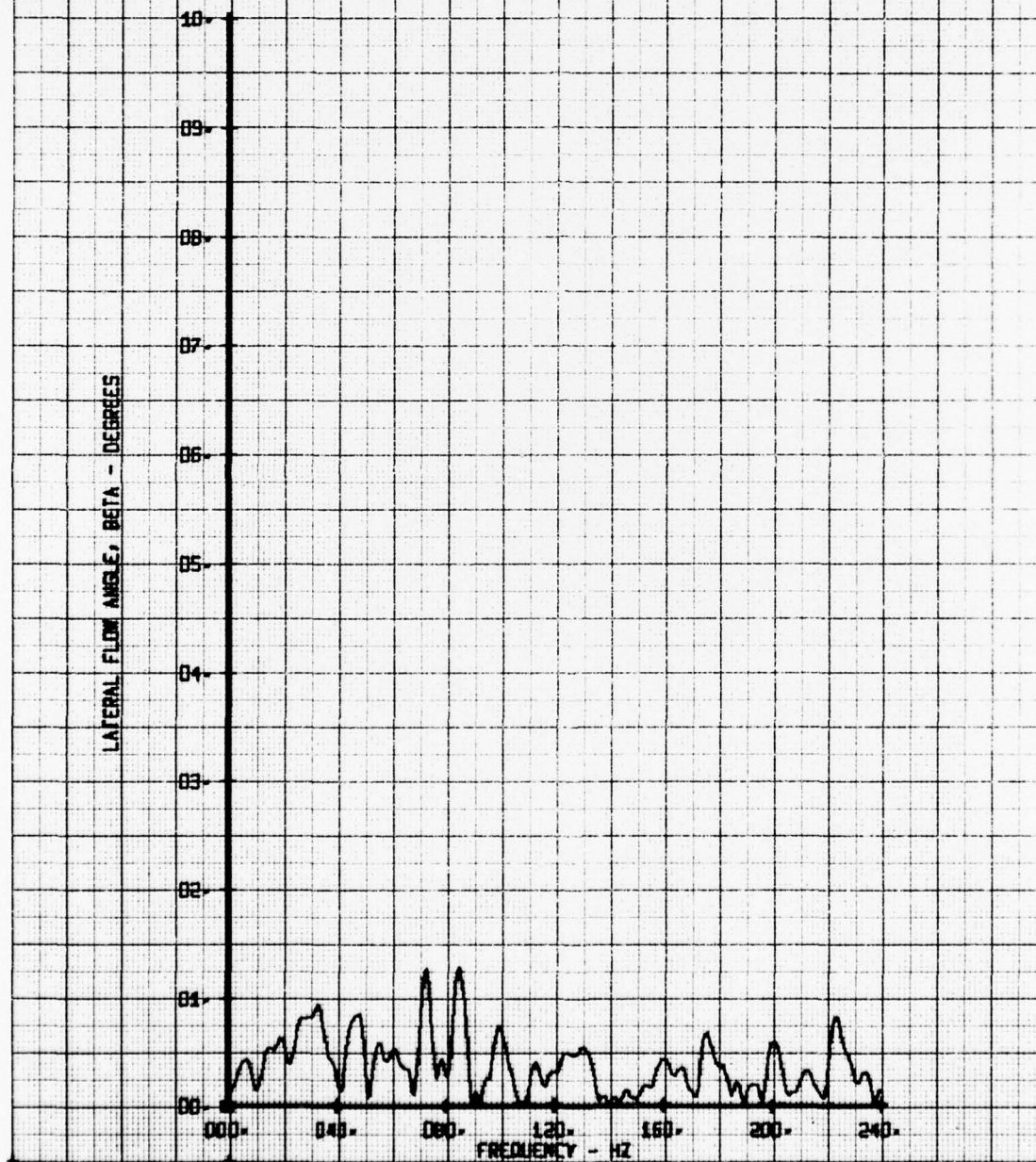
LEGEND
CH PARAMETER
BS BETA

LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
ATR E.I.T. - W/C SHRD. W. I TP 150PST
RUN 185 TP 4

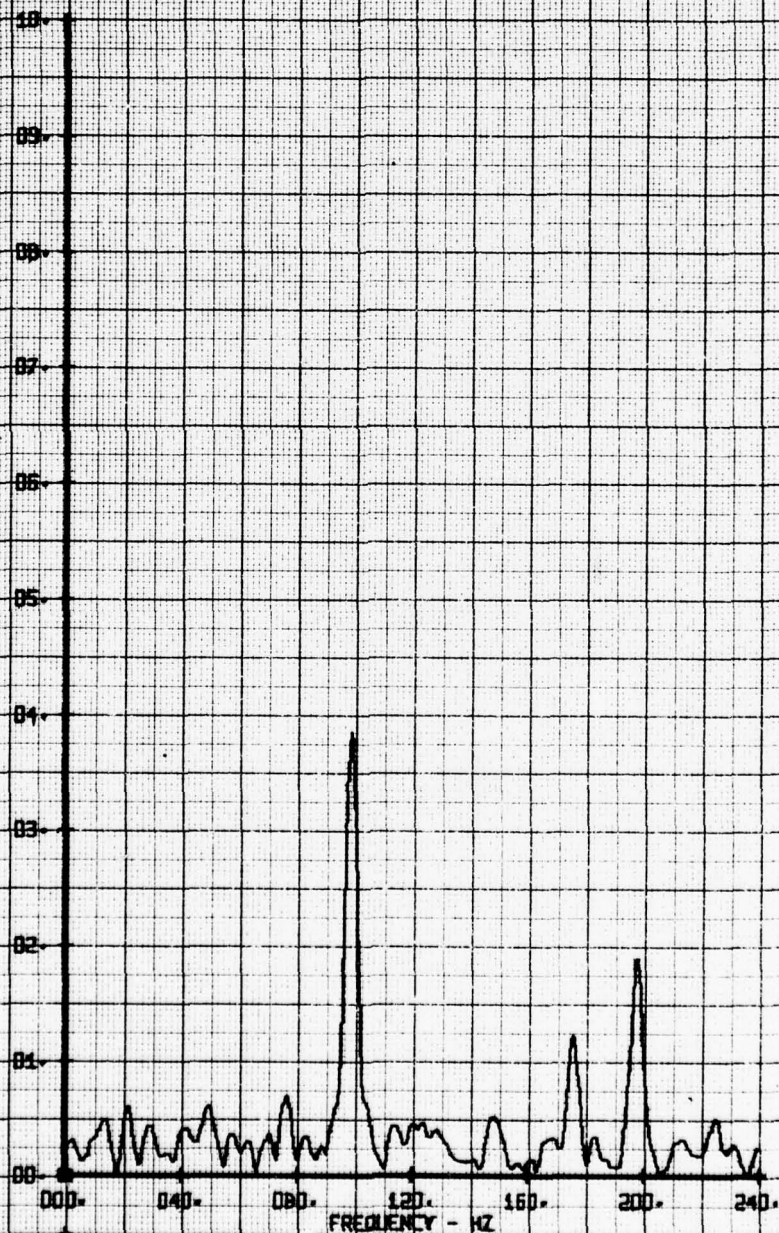
LEGEND
CH 65
PARAMETER
BETA



HOT FILM WAVE FREQUENCY ANALYSIS
AIR C.F.T. WTC 5000, W. LTP 150H51
RUN 105 TP 5

LEGEND
CH PARAMETER
05 BETA

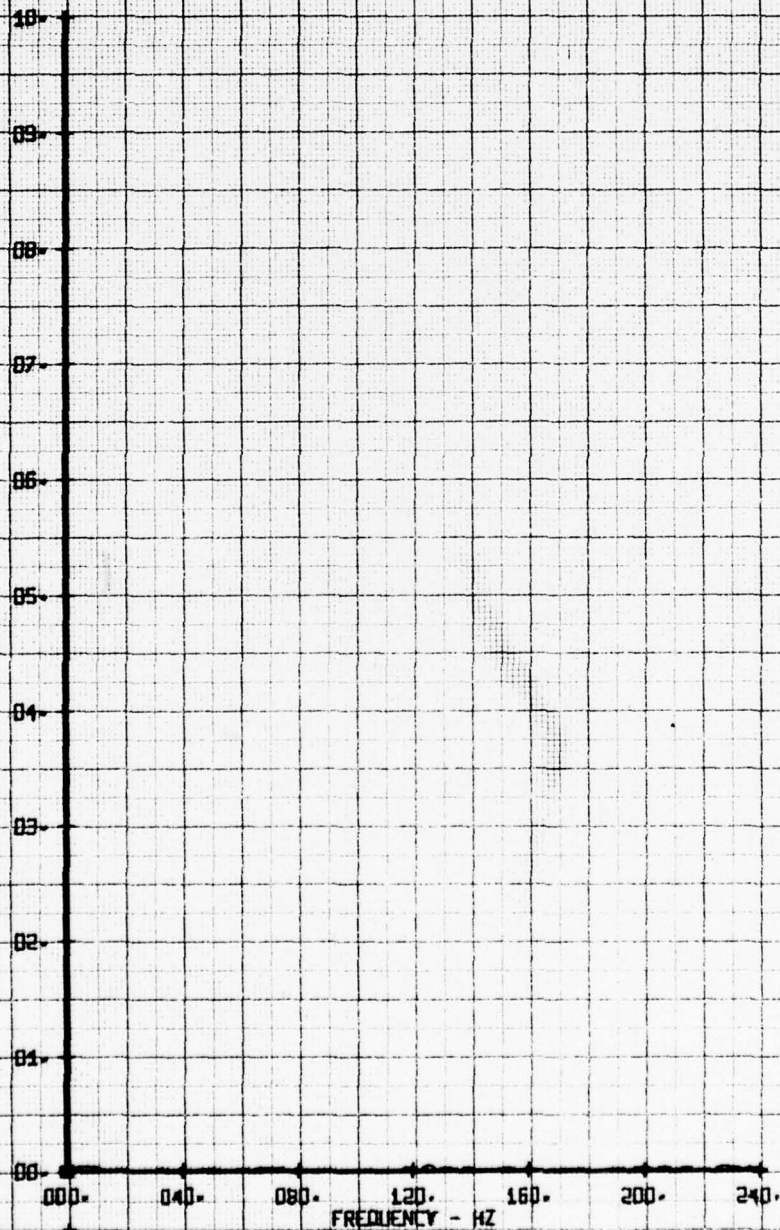
LATERAL FLOW ANGLE, BETA - DEGREES



NOI FILM WAKE FREQUENCY ANALYSIS
ATR E.T. WTC 5400. W. LTP 150PST
RUN 185 TP 7

LEGEND
CH PARAMETER
55 BETA

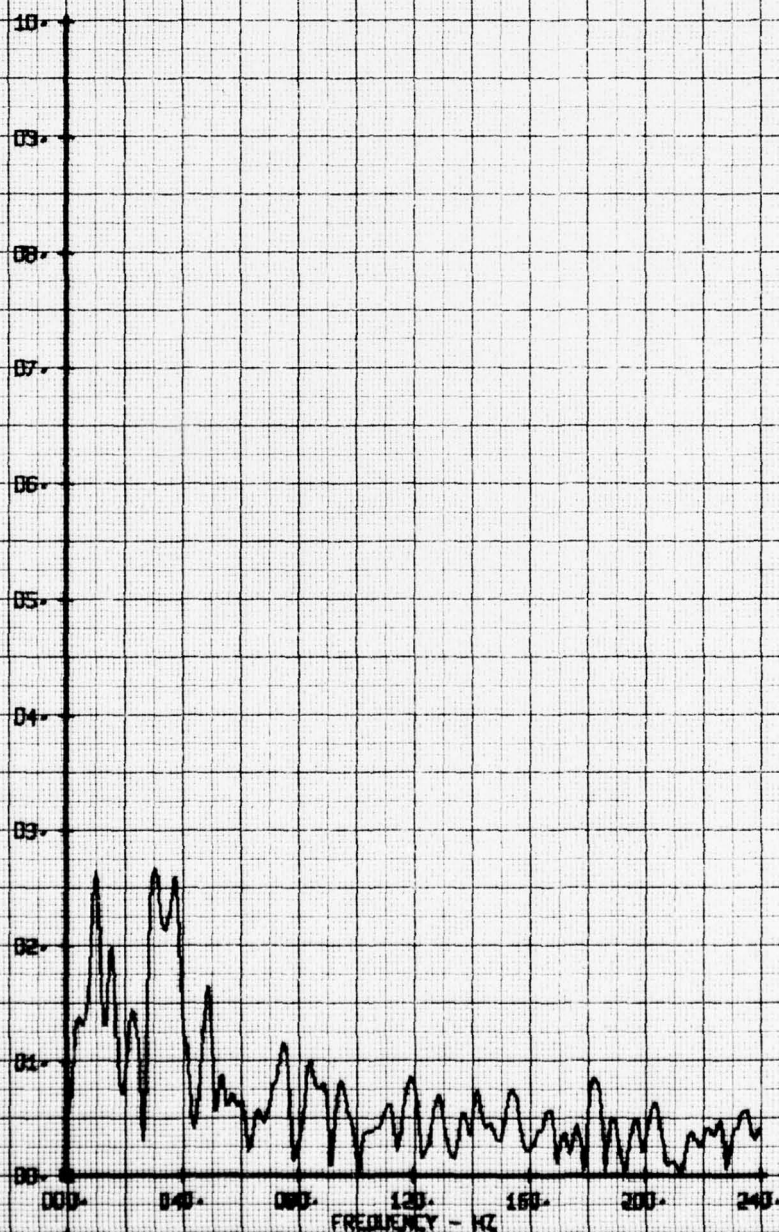
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AER EJECT. W/C SHRD. W. LIP 150PSI
RUN 1BS TP 1

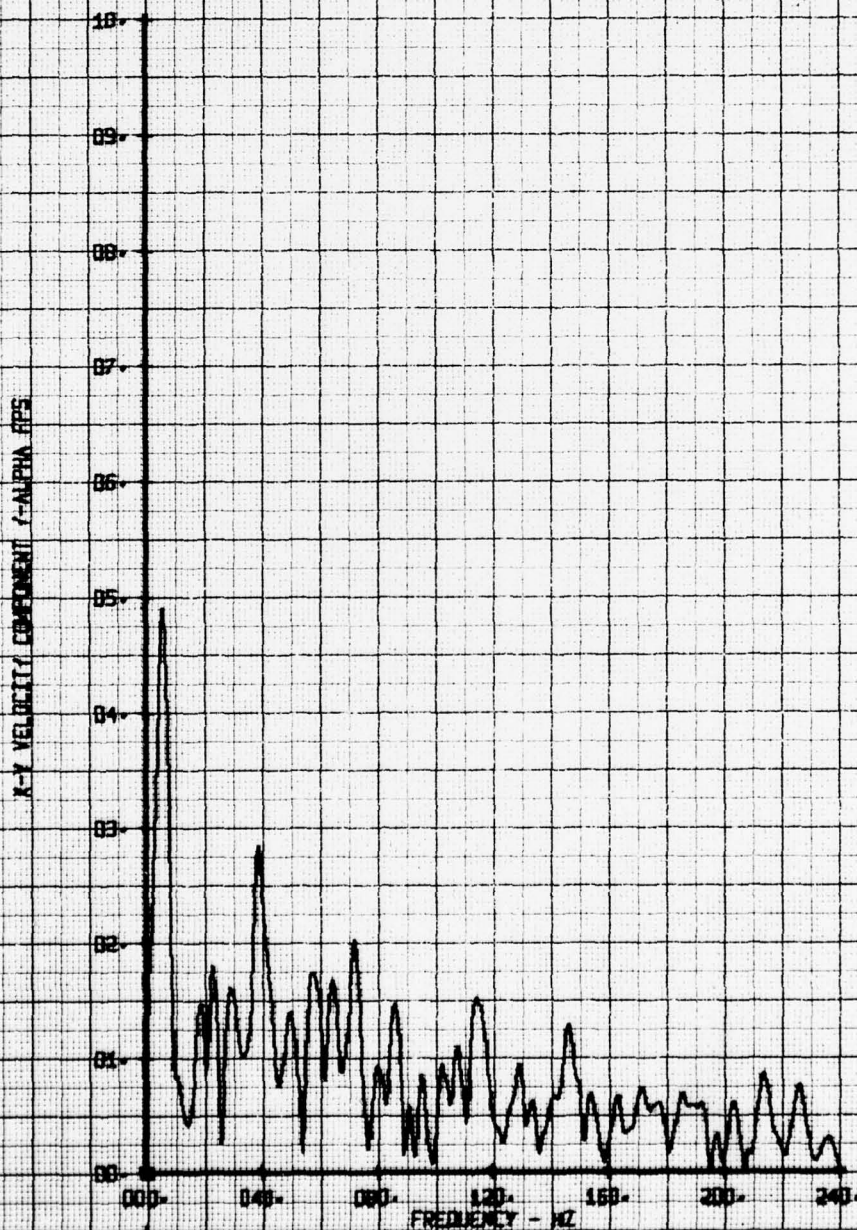
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



HOY FILM WAKE FREQUENCY ANALYSIS
ACR ECT. W/ SHRO. W. 1TP 150R51
RUN 185 TP 2

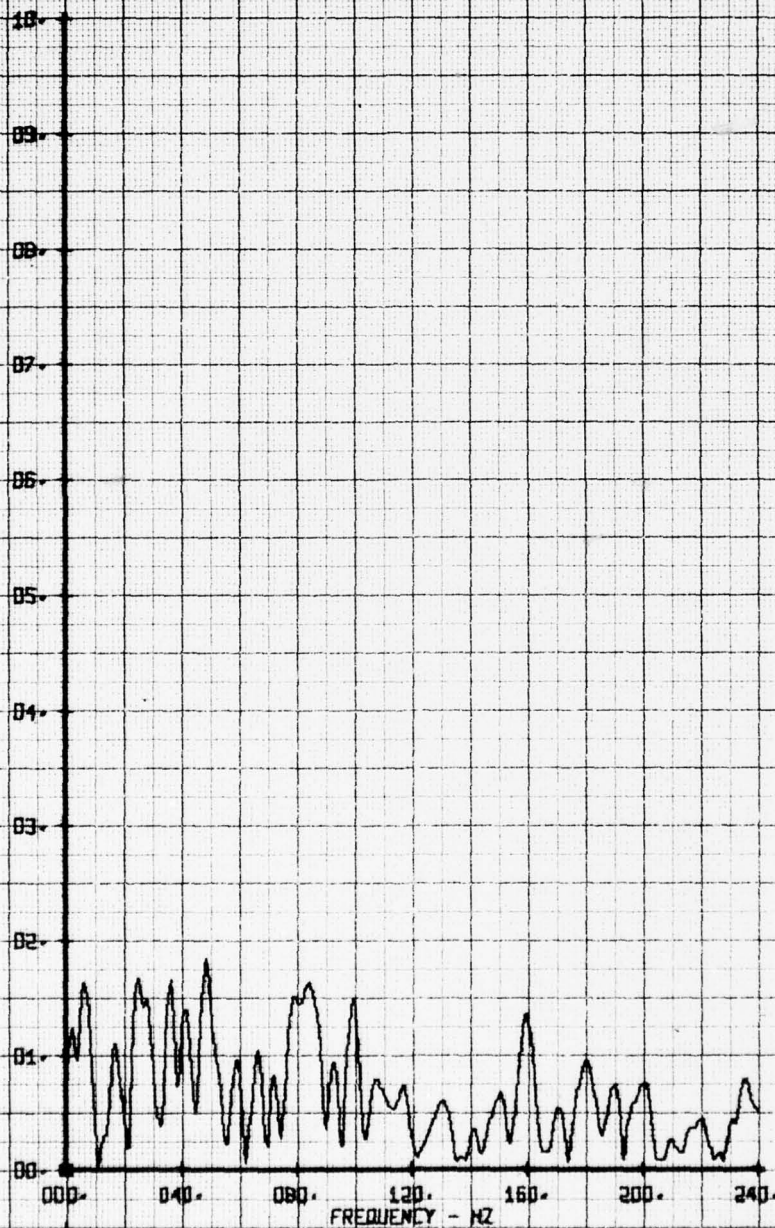
LEGEND
CH 66
PARAMETER
V-ALPHA



WIT FILM WAKE FREQUENCY ANALYSIS
AER. E. CT. WIT. 5000. W. 1 TR 150R51
RIN 185 TP 3

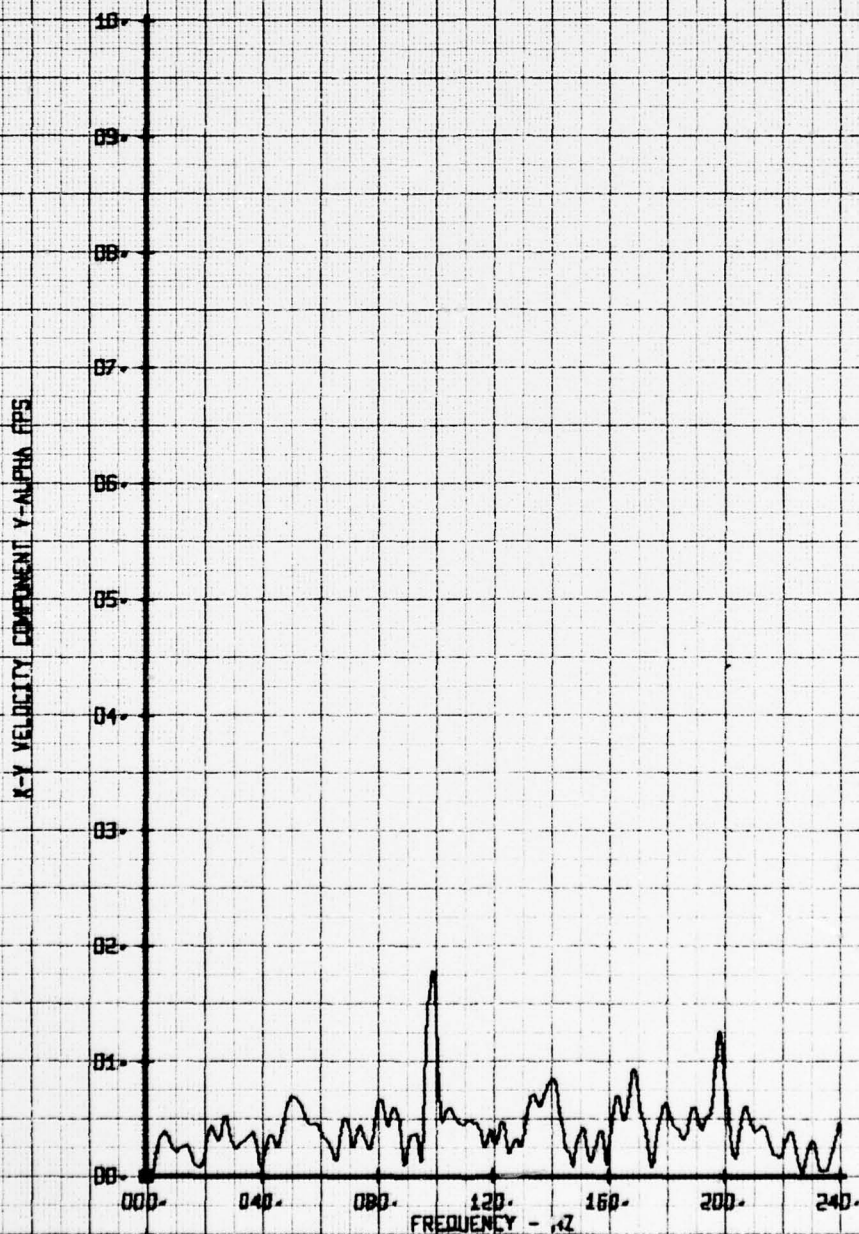
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



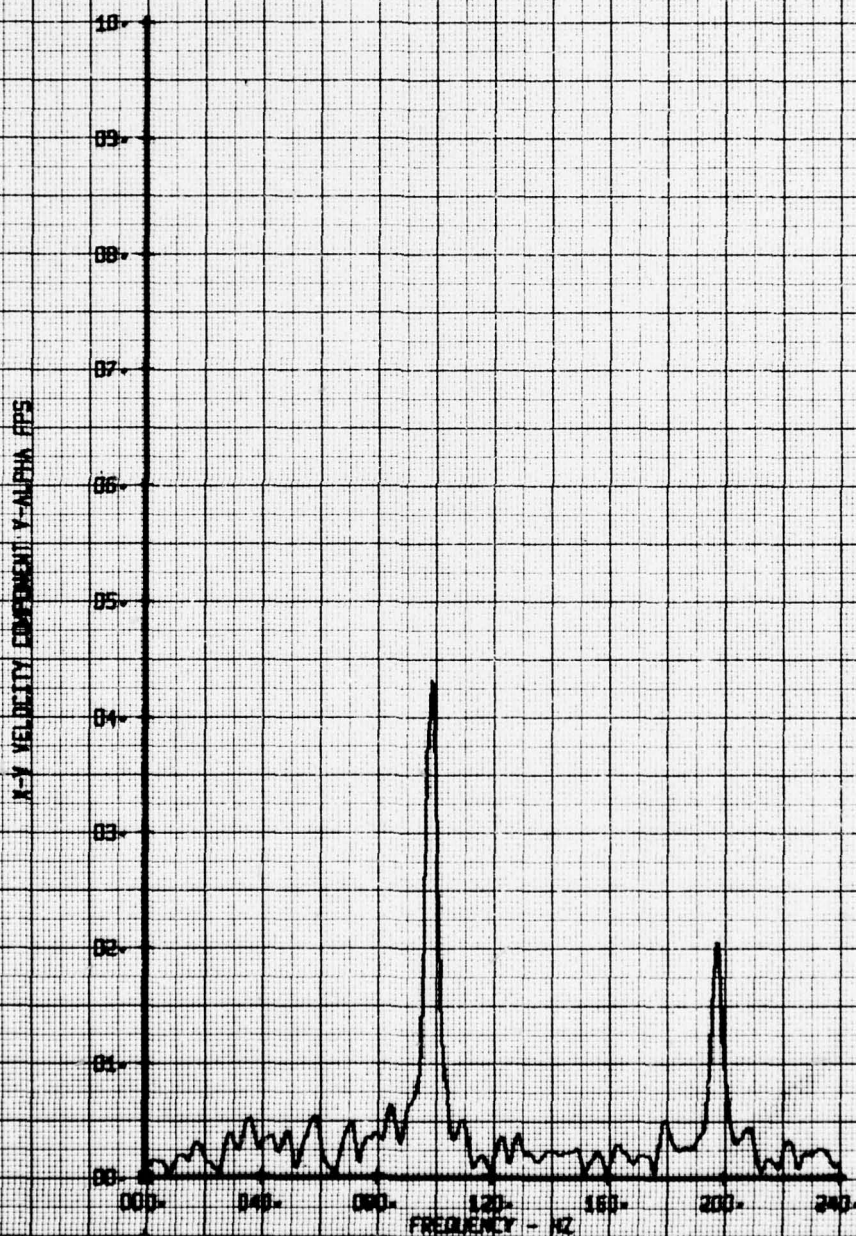
HOT FILM WAKE FREQUENCY ANALYSIS
AIR F.C.T. W/C SMO. W. 1 IP 150R51
RUN 185 TP 4

LEGEND
CH PARAMETER
66 V-ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
AFC ECT. W/C SHD. W. LTP 150RST
RUN 185 TP 5

LEGEND
CH PARAMETER
66 V-ALPHA



HOY FILM WAVE FREQUENCY ANALYSIS
AER E.C.T. W/C SARD. W. 1 TR 150RST
RUN 185 TP 7

LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS

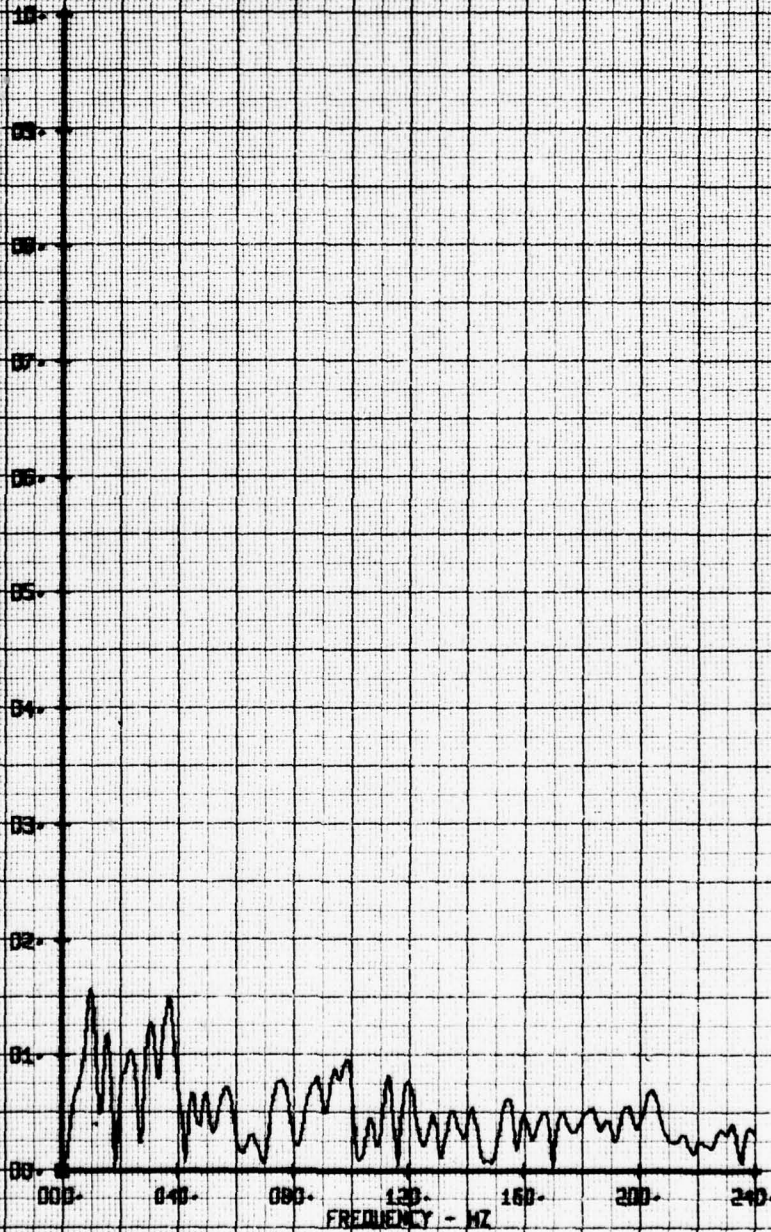
10
9
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0

000. 040. 080. 120. 160. 200. 240.
FREQUENCY - HZ

HOT FILM WIRE FREQUENCY ANALYSIS
AIR FCT. W/C SAND. 9-1-64 450PSI
RUN LOG IV 1

LEGEND
ON PARAMETER
PS Y-BETA

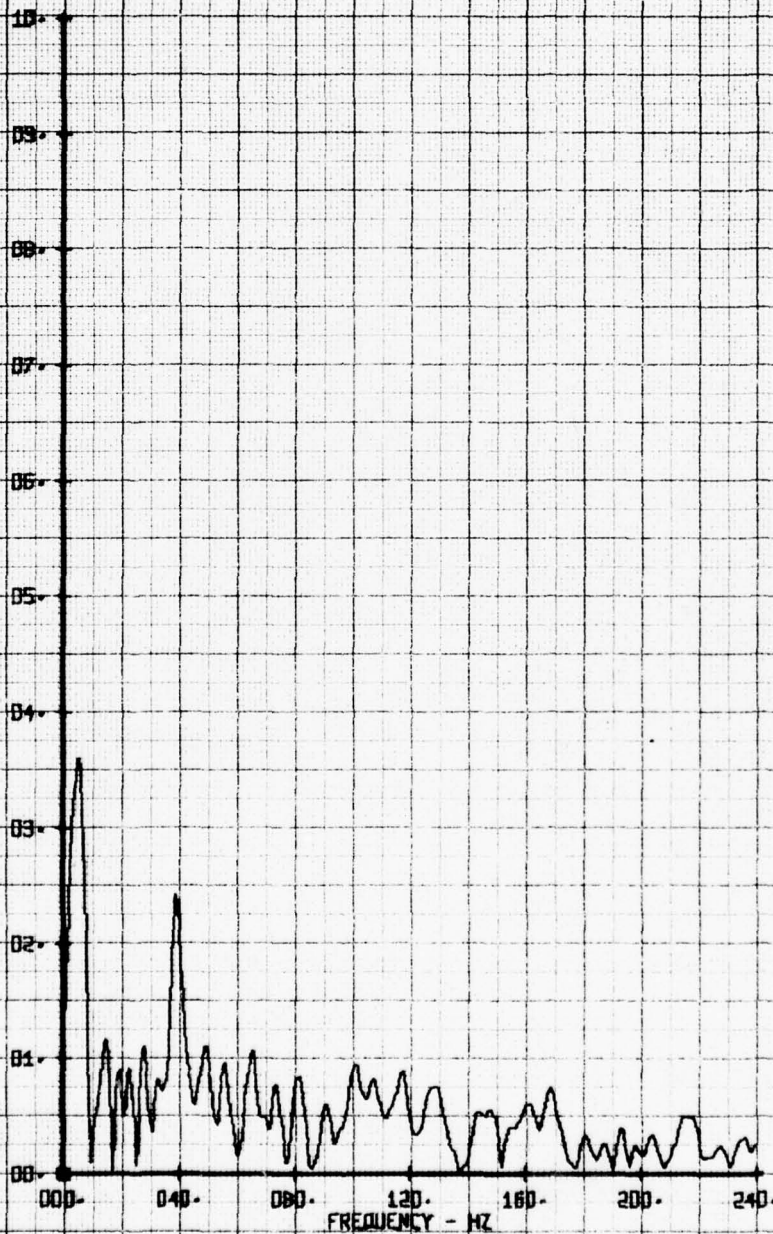
X-Y VELOCITY COMPONENT Y-BETA FPS



HOT FILM WAVE FREQUENCY ANALYSIS
ACR ECT. WTC SHD. W. LTP 150PSI
RUN 185 TP 2

LEGEND
CH PARAMETER
65 V-BETA

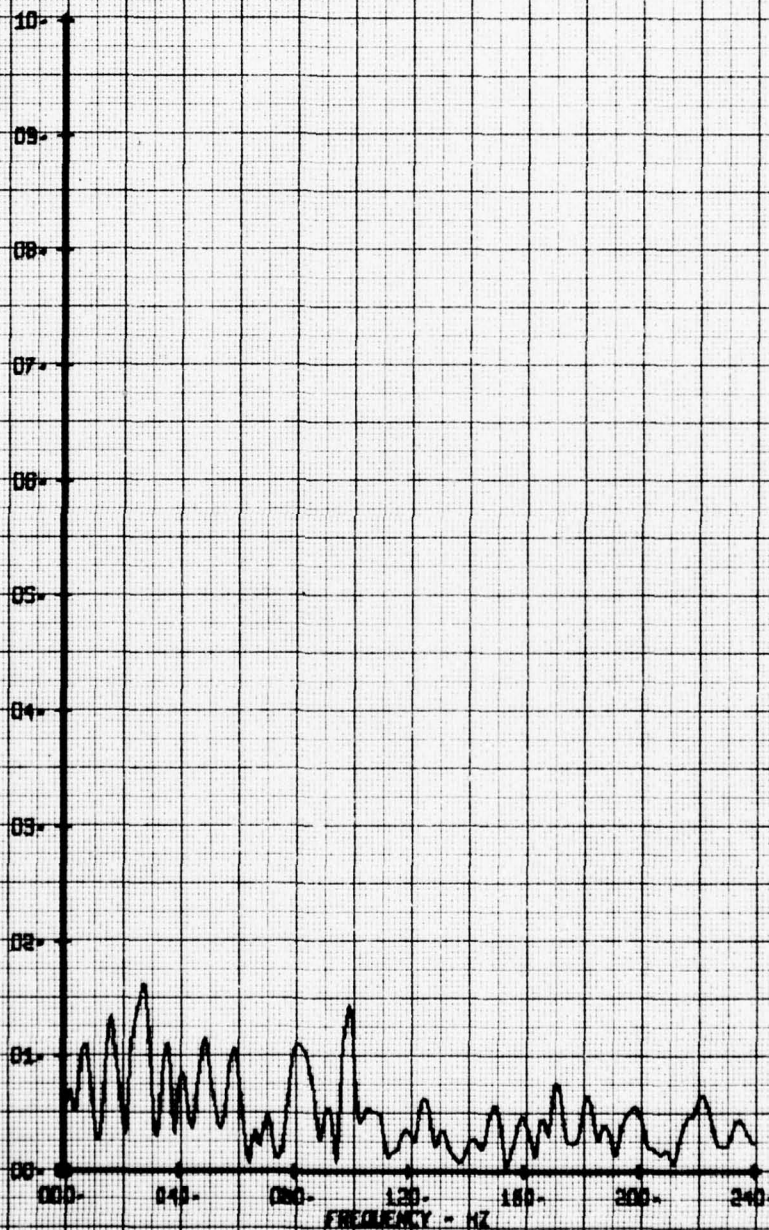
X-Z VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. WVC SHRD. W. LTP 150PSI
RUN 185 TP 3

LEGEND
CM PARAMETER
65 V-BETA

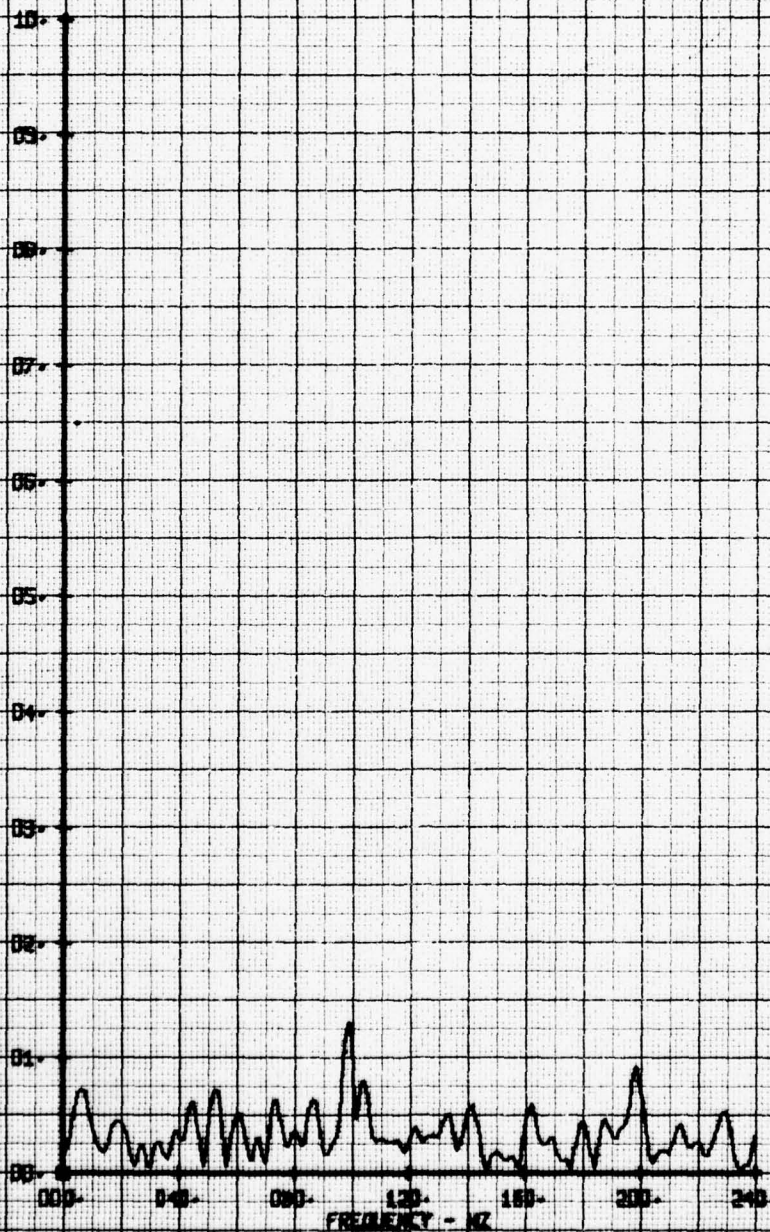
X-2 VELOCITY COMPONENT V-BETA FPS

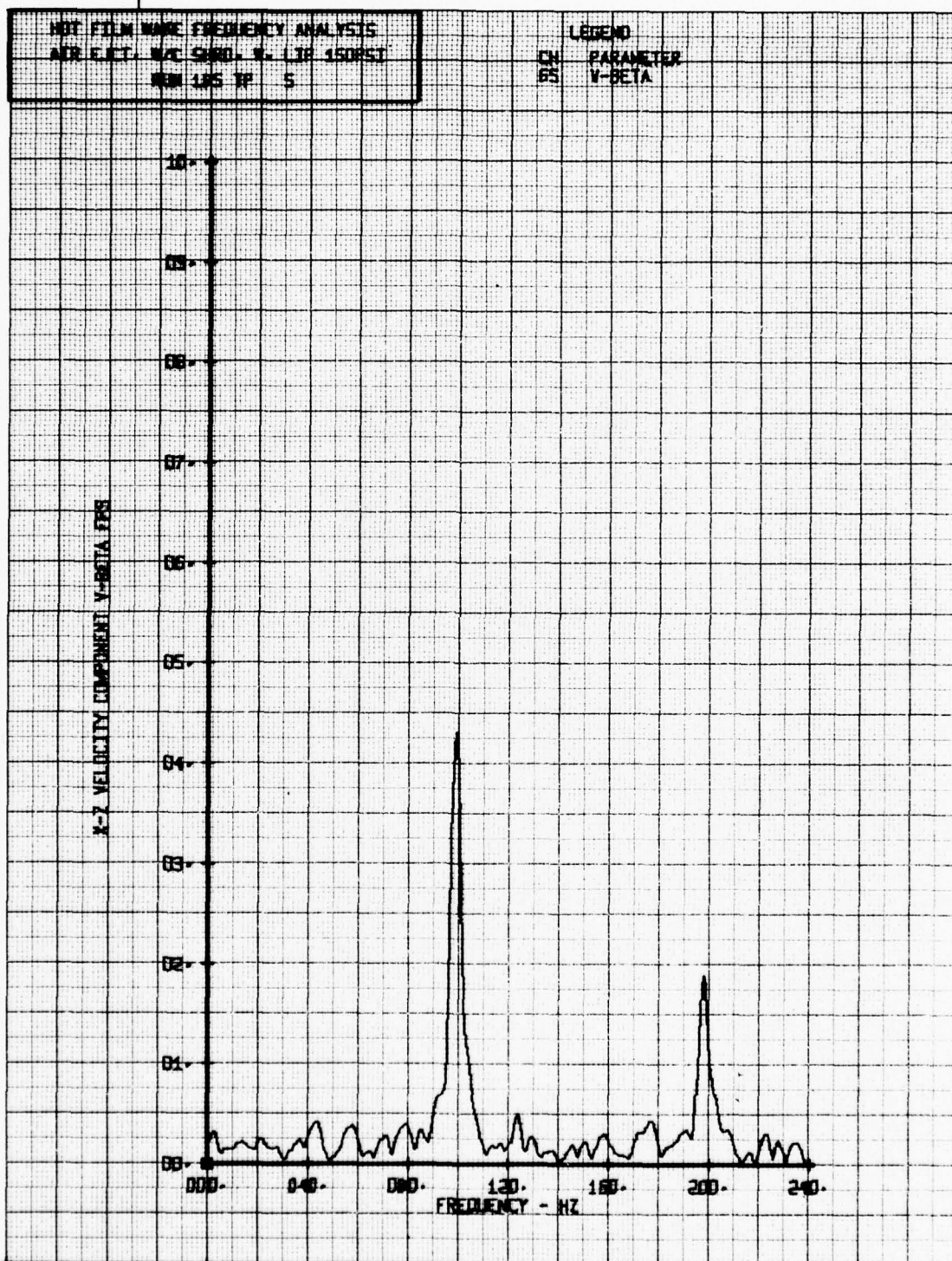


HOT FILM WAKE FREQUENCY ANALYSIS
AER E.N.T. W/C SHRO. W. LTP 150RST
RUN 1PS TP 4

LEGEND
CH PARAMETER
DS V-BETA

X-2 VELOCITY COMPONENT V-BETA.FPS

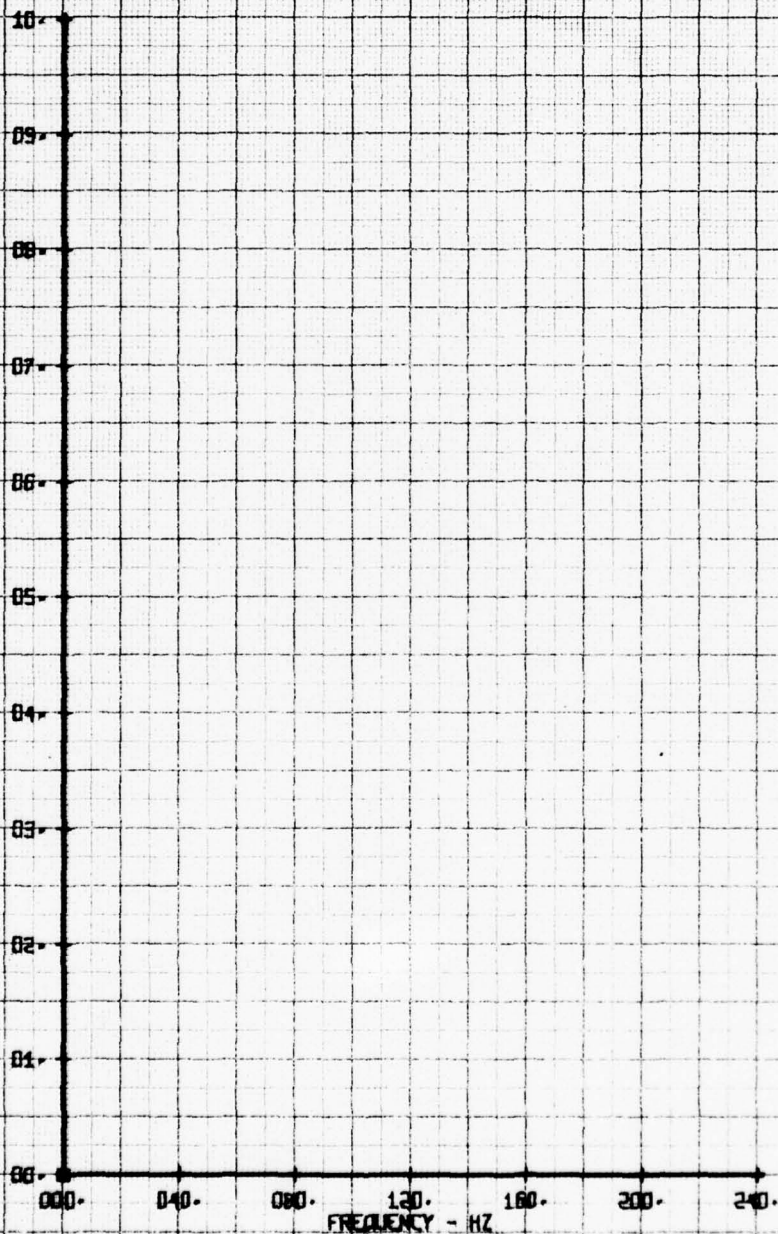




MIT FILM WAVE FREQUENCY ANALYSIS
 AIR E CT. W/C SHRO. W. LTP 150RST
 RUN LBS TP 7

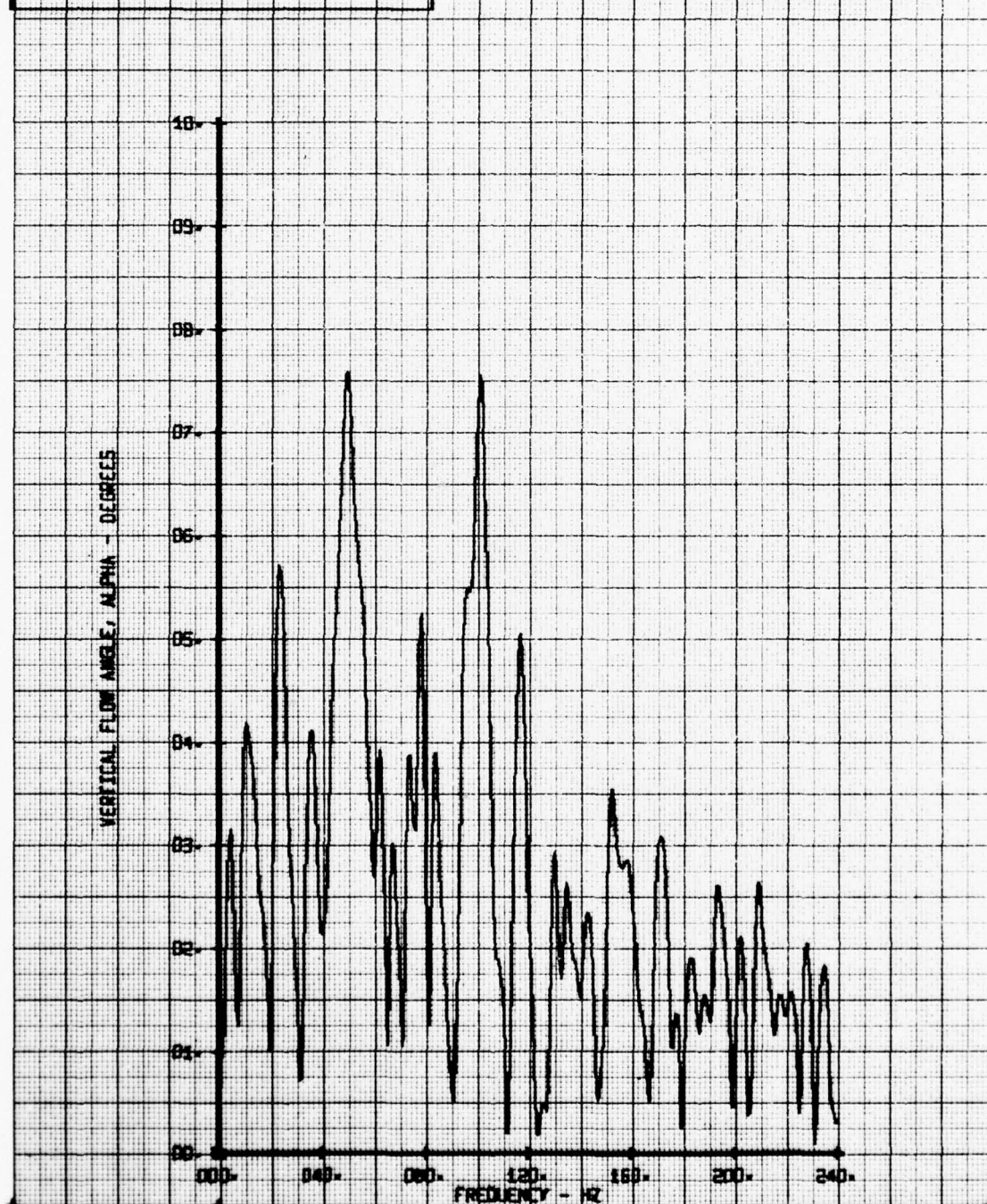
LEGEND
 CH PARAMETER
 BS V-BETA

X-Z VELOCITY COMPONENT V-BETA FPS



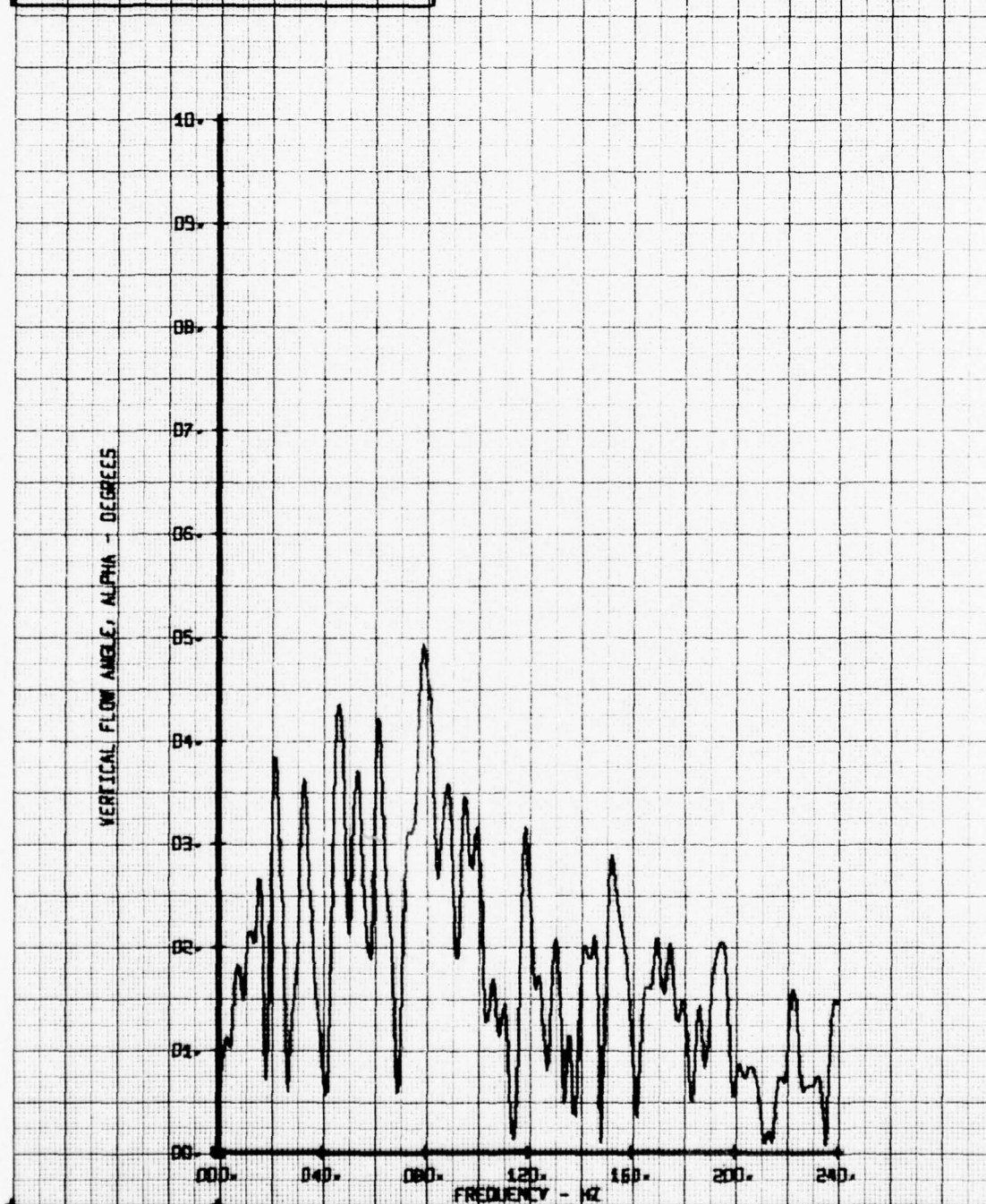
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 2

LEGEND
CH 56 PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT, W/C SHRO, CONTR PAR, 150P
RUN 187 TP 3

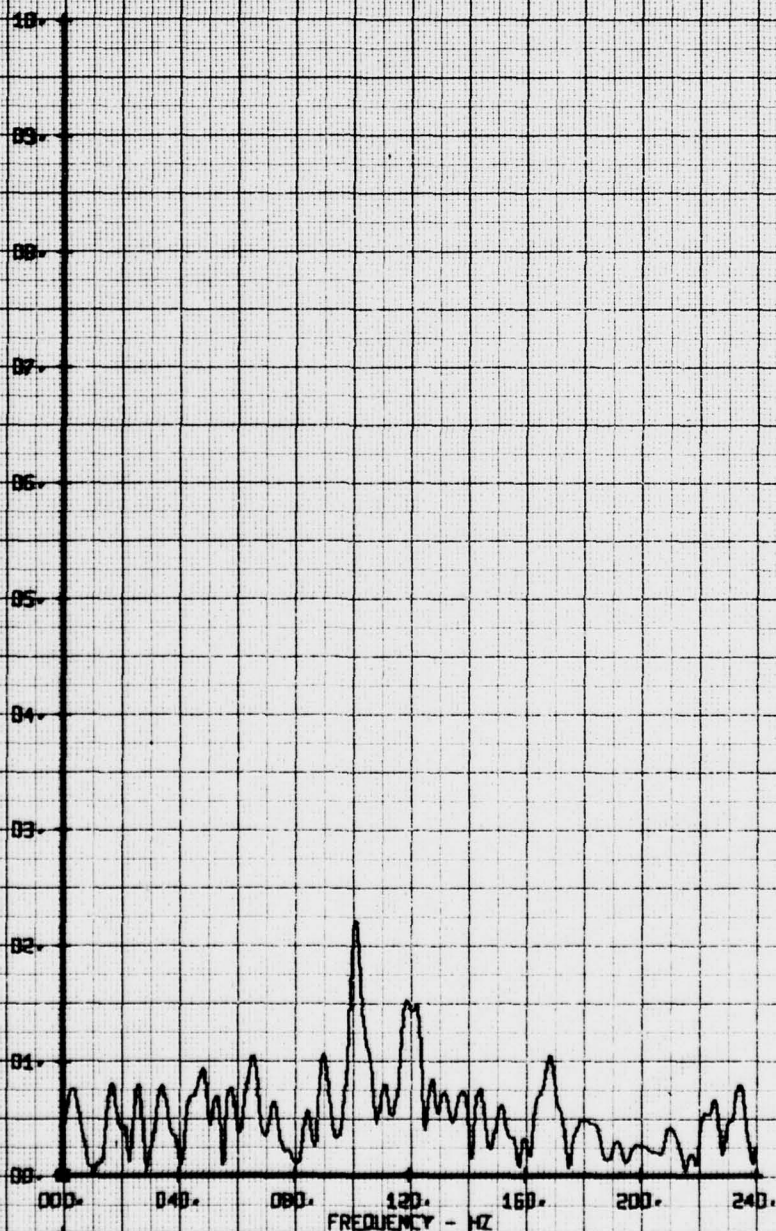
LEGEND
CH 66 PARAMETER
66 ALPHA



HOT FILM WIRE FREQUENCY ANALYSIS
AIR F.C.T. W.C. 5000. KENTON P.A.R. 150P
RAN 107 TF

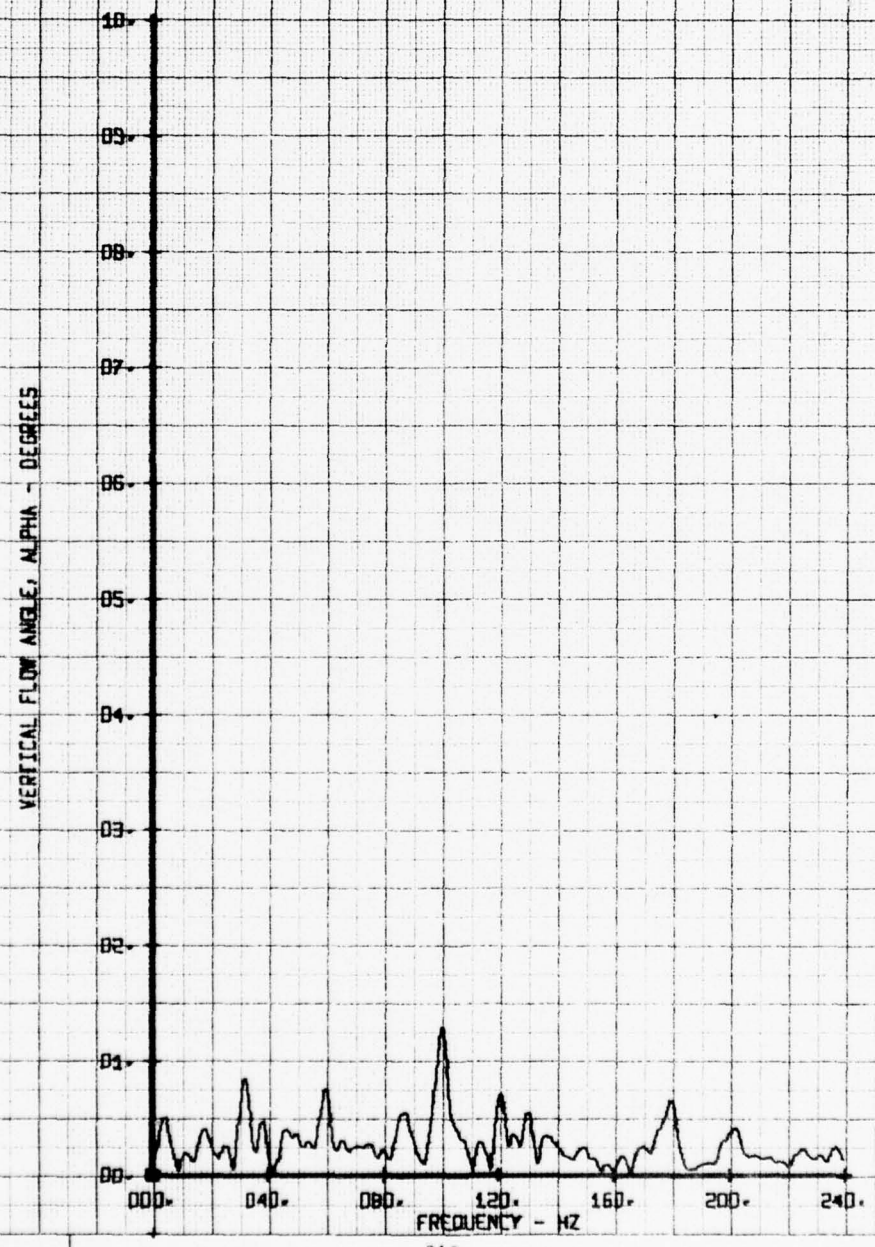
LEGEND
CH PARAMETER
SS ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



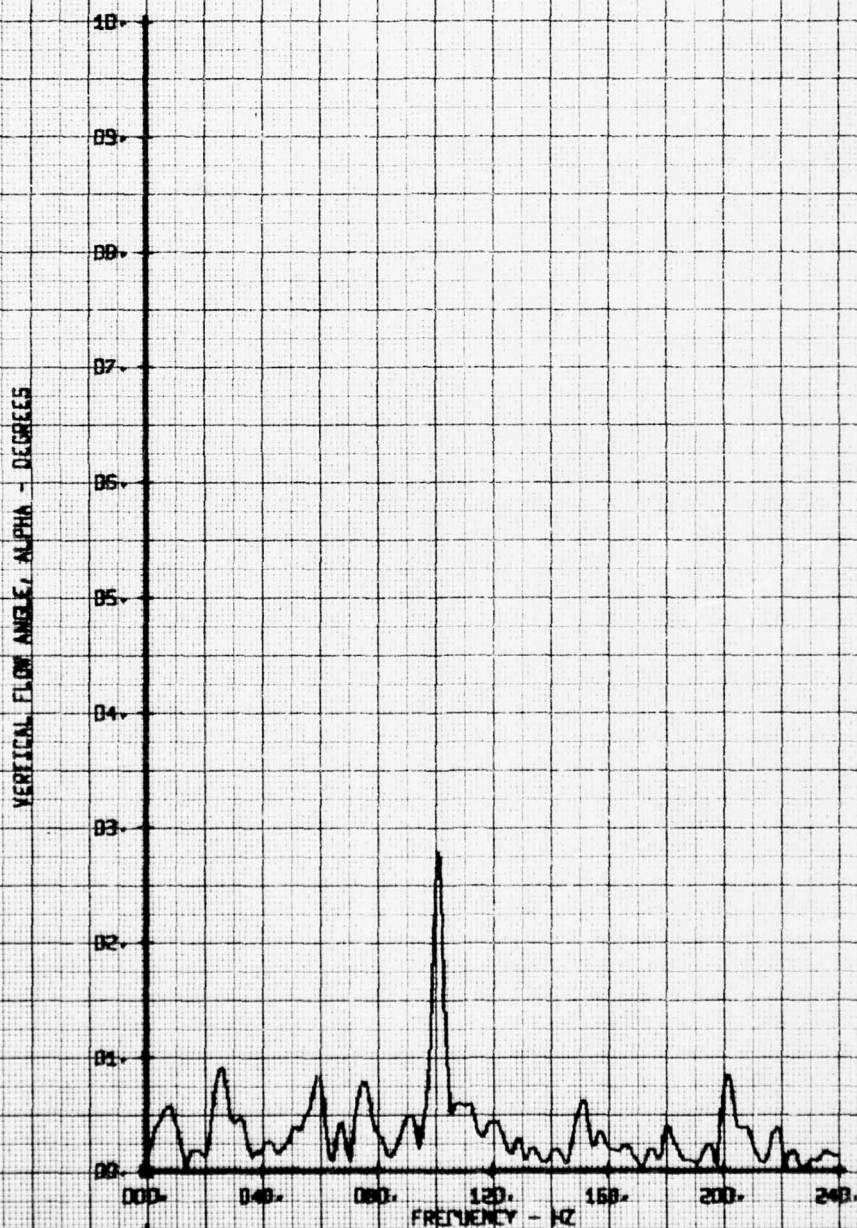
NOT FILM WAKE FREQUENCY ANALYSIS
ATR ECT. W/C SHRD. CONTR. PAR. 150P
RUN 187 TP 5

LEGEND
CH 55 PARAMETER
ALPHA



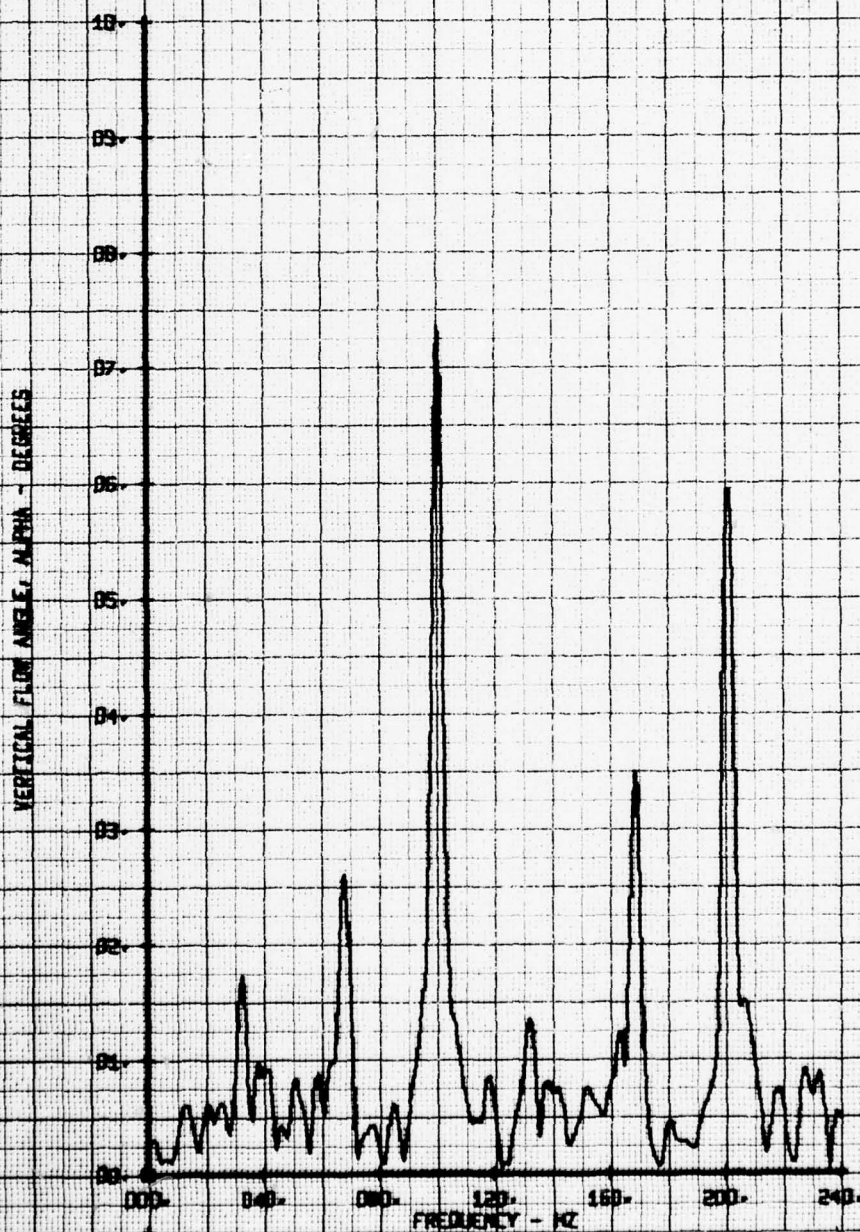
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR PAR. 150P
RUN 187 TP. 6

LEGEND
CH. 66
PARAMETER
ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR E.J.T. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 7

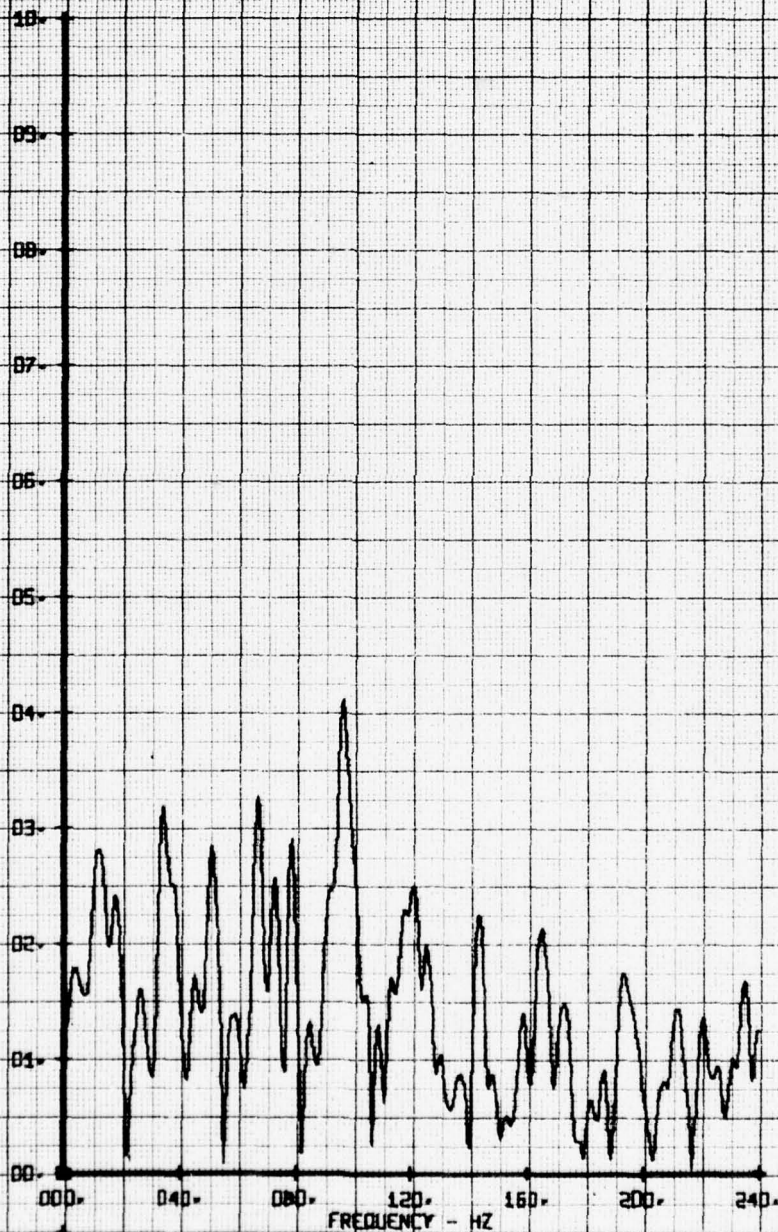
LEGEND
CH 66
PARAMETER
ALPHA

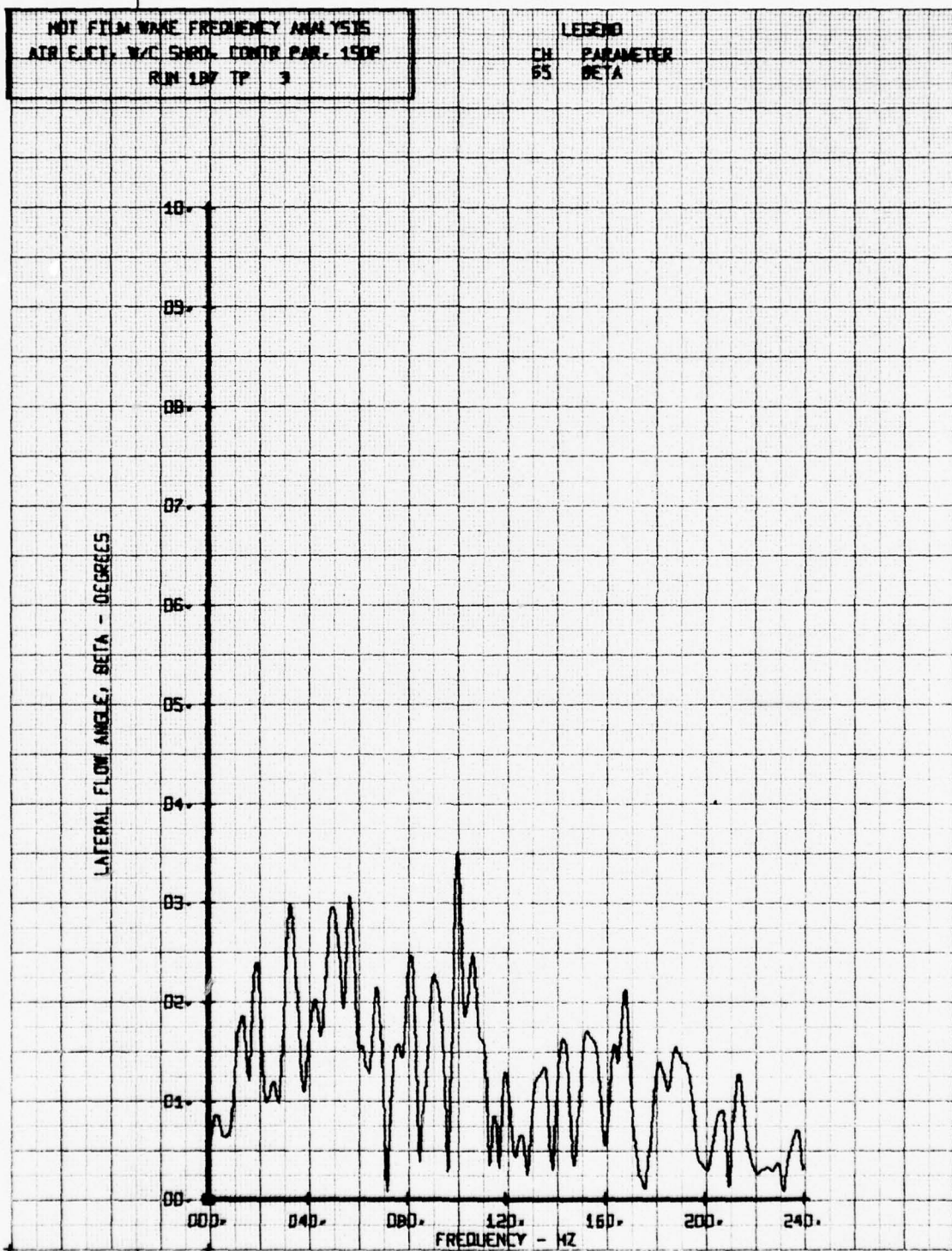


NOT FILM WAVE FREQUENCY ANALYSIS
AIR C.T. W/C SHRO. CONTR PAR. 150P
RUN 187 TP 2

LEGEND
CH PARAMETER
65 BETA

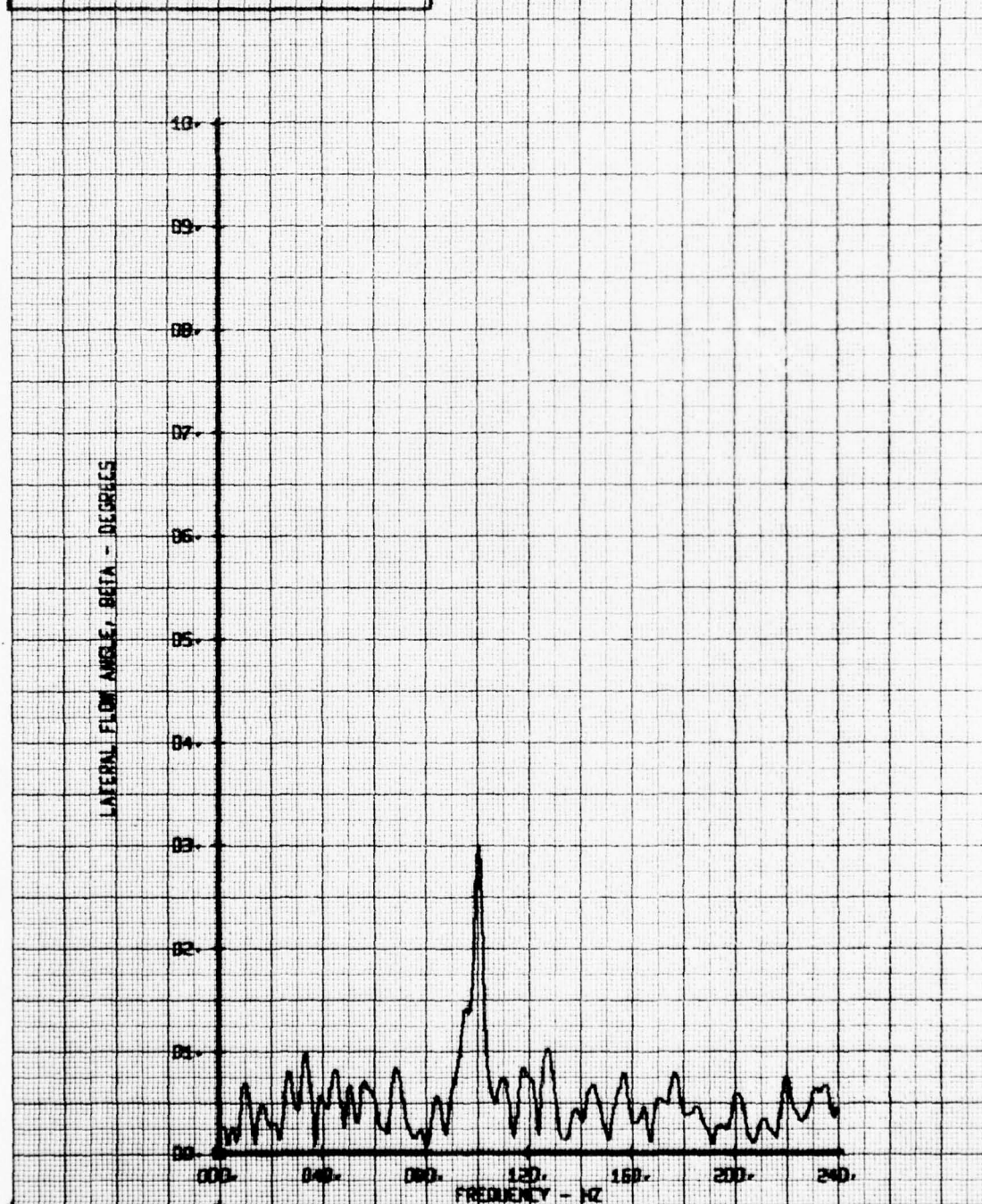
LATERAL FLOW ANGLE, BETA - DEGREES





HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW: W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 4

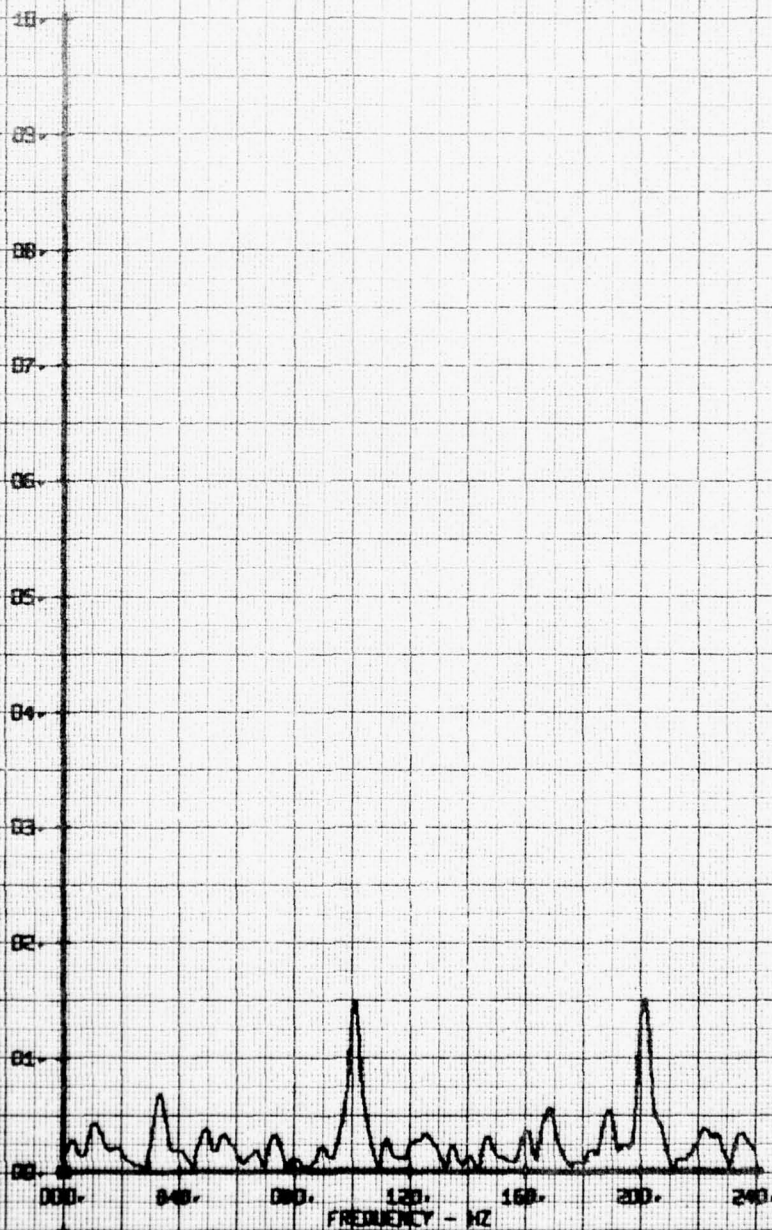
LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
BIN 187 TP 5

LEGEND
CH PARAMETER
SS BETA

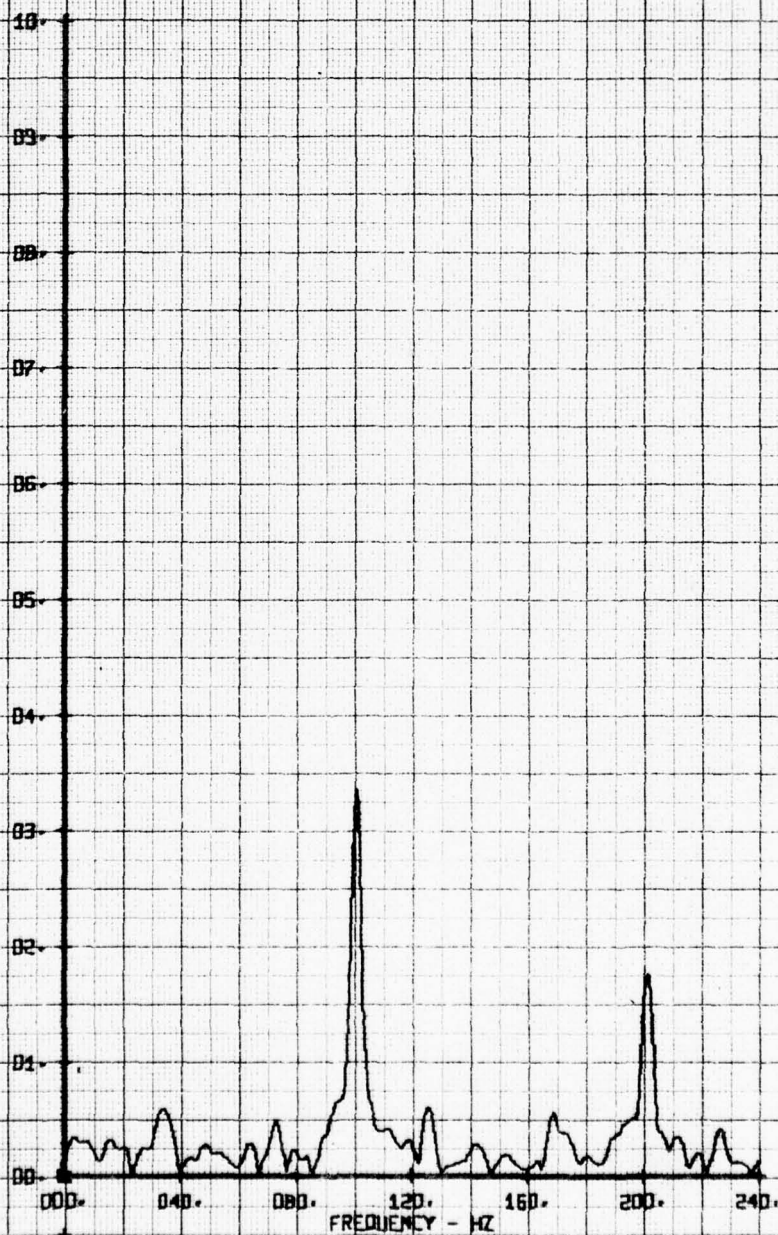
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLY. W/C SHRG. CONTR PAR. 150P
RUN 187 TP 6

LEGEND
CH PARAMETER
65 BETA

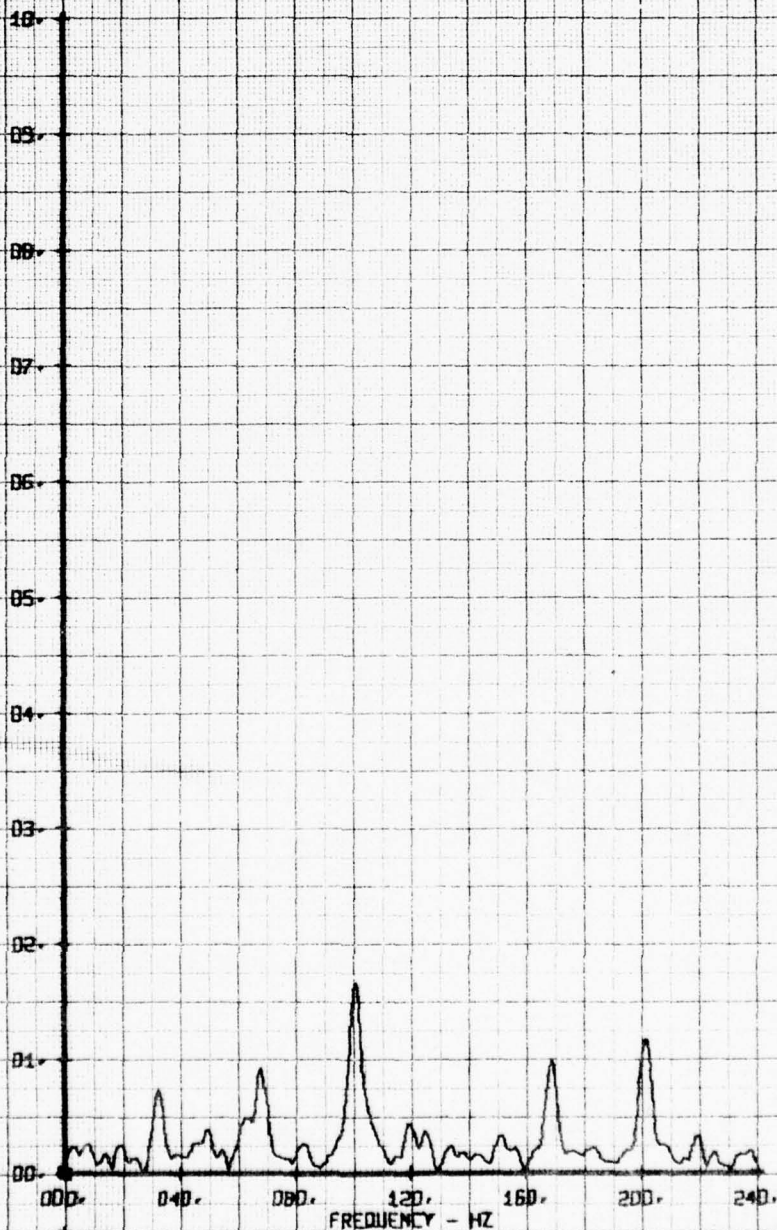
LATERAL FLOW ANGLE, BETA - DEGREES



HOY FILM WAVE FREQUENCY ANALYSIS
ATR E.J.T. W/C SHRD. CONTR PAR. 150P
RUN 187 TP 7

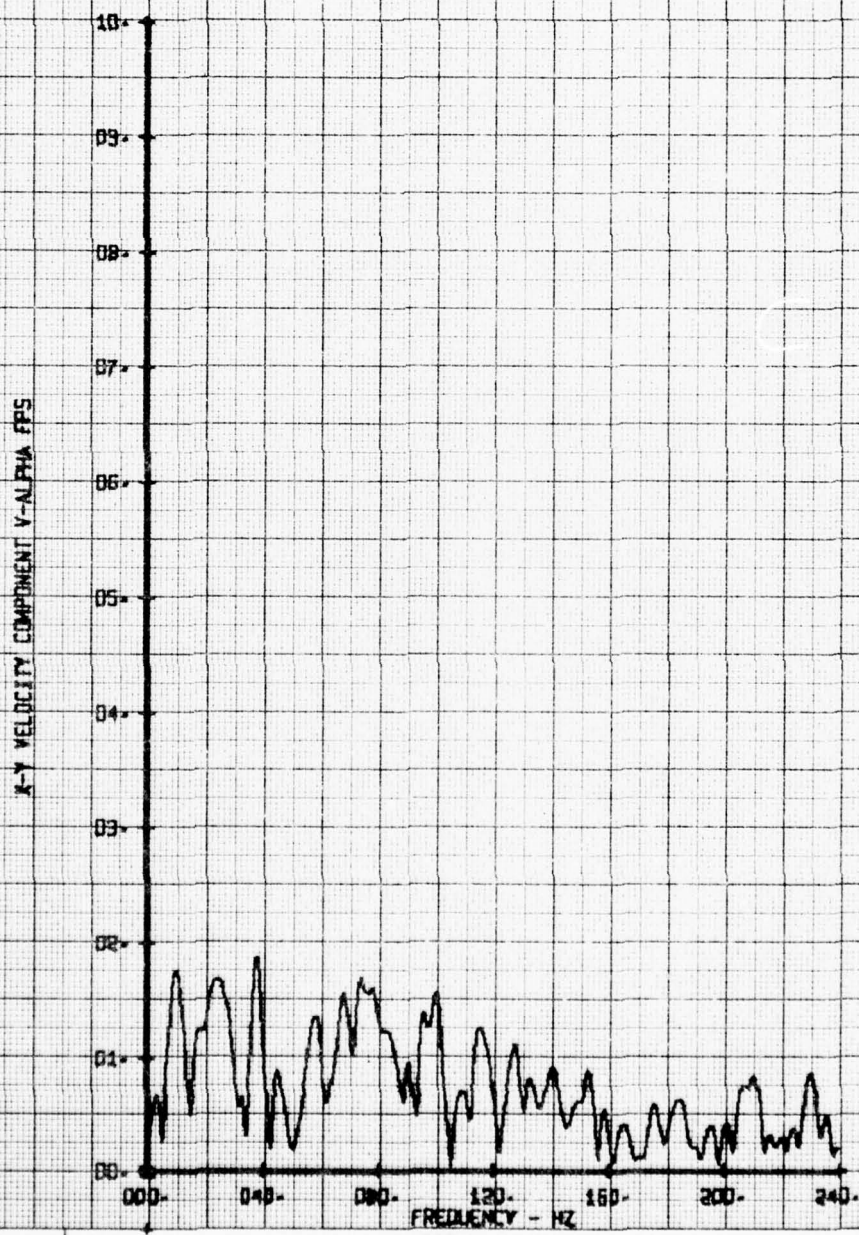
LEGEND
DN PARAMETER
6S BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRD. CONTR. PAR. 150P
RUN 187 TP 2

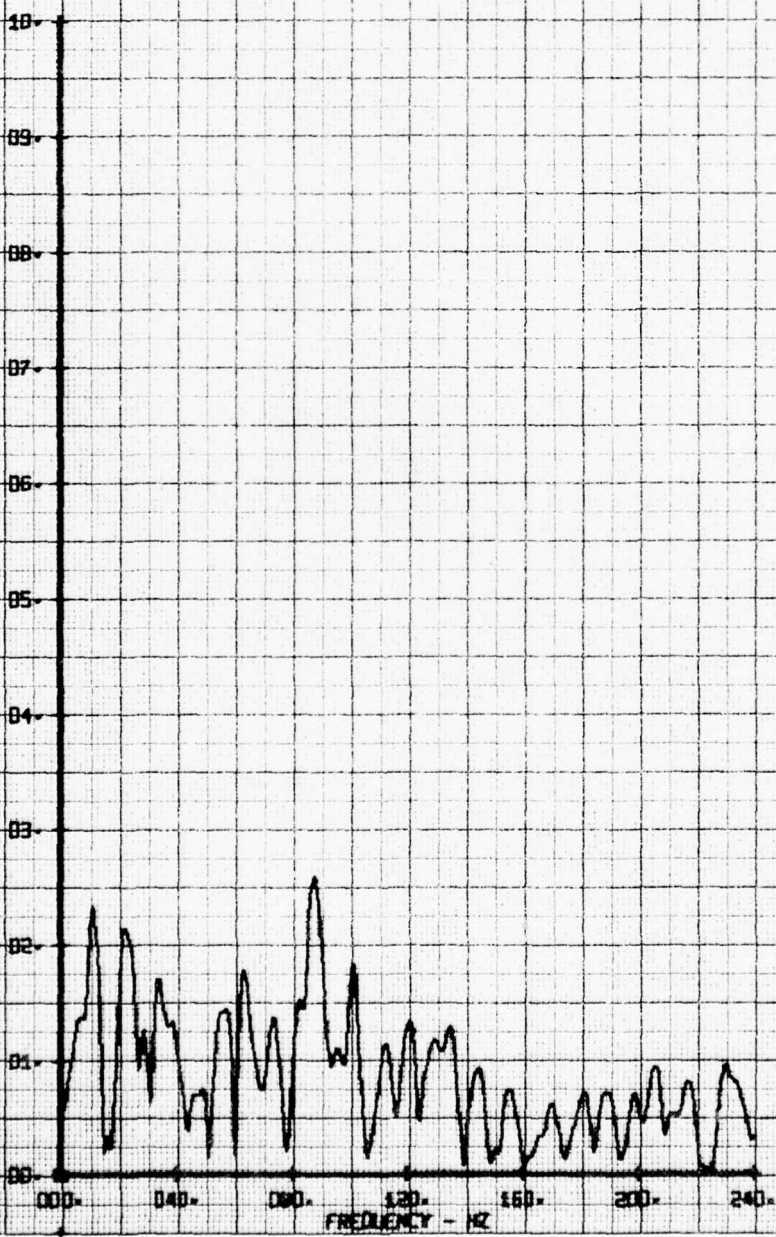
LEGEND
CH 56 PARAMETER
Y-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR E.I.C.T. W/C SHRO. CONTR PAR. 150P
RUN 187 TP 3

LEGEND
CH 55
PARAMETER
Y-ALPHA

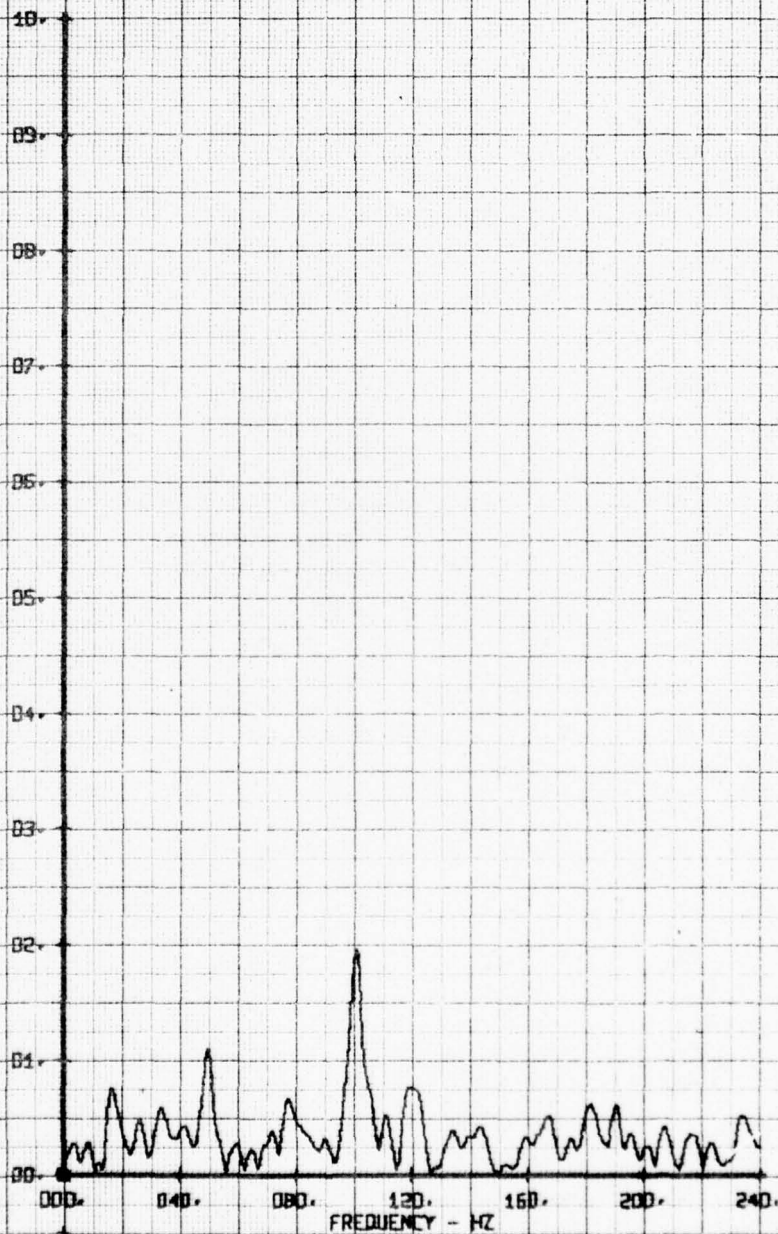
X-Y VELOCITY COMPONENT Y-ALPHA FPS



NOT FILM WAKE FREQUENCY ANALYSIS
ATR EXC. W/C SHRO. CONTR CAR. 150P
RUN 187 TP. 4

LEGEND
CH PARAMETER
66 V-ALPHA

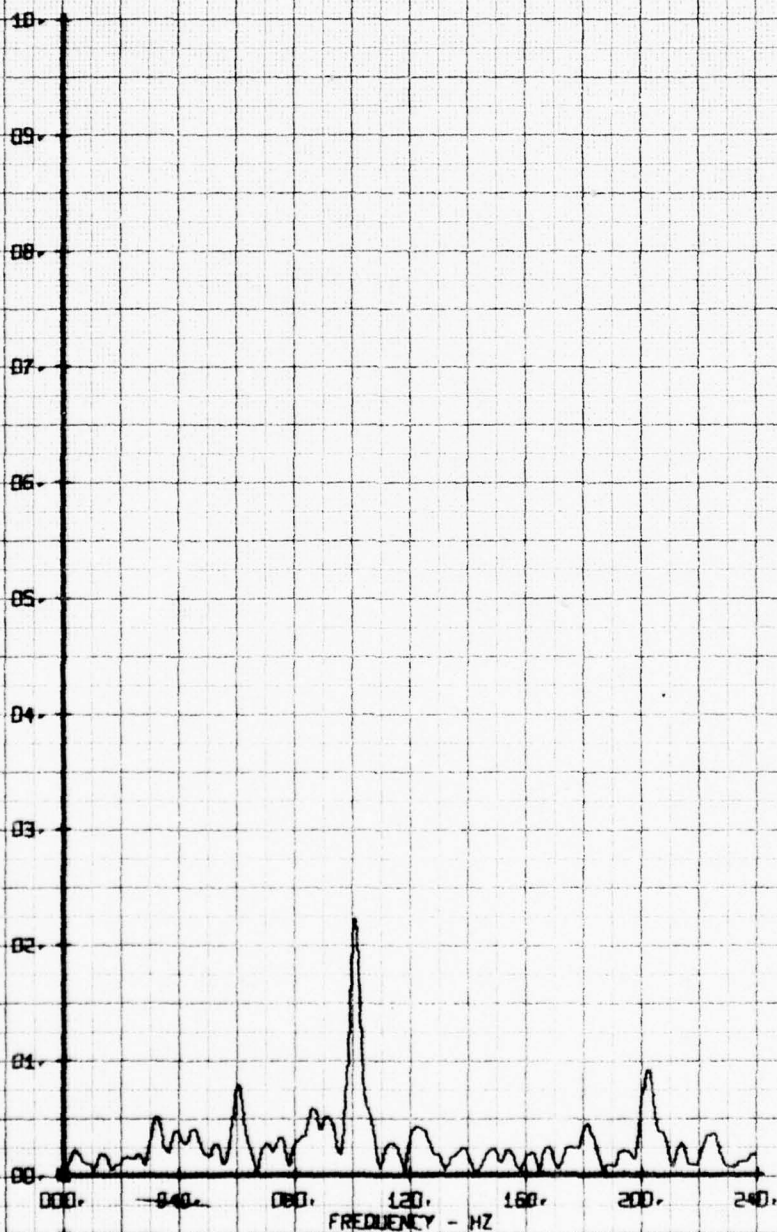
X-Y VELOCITY COMPONENT V-ALPHA FPS



NOT FILM WAVE FREQUENCY ANALYSIS
ATR EJECT, W/T SHRD, CONTR PAR, 15DP
RUN 187 TP 5

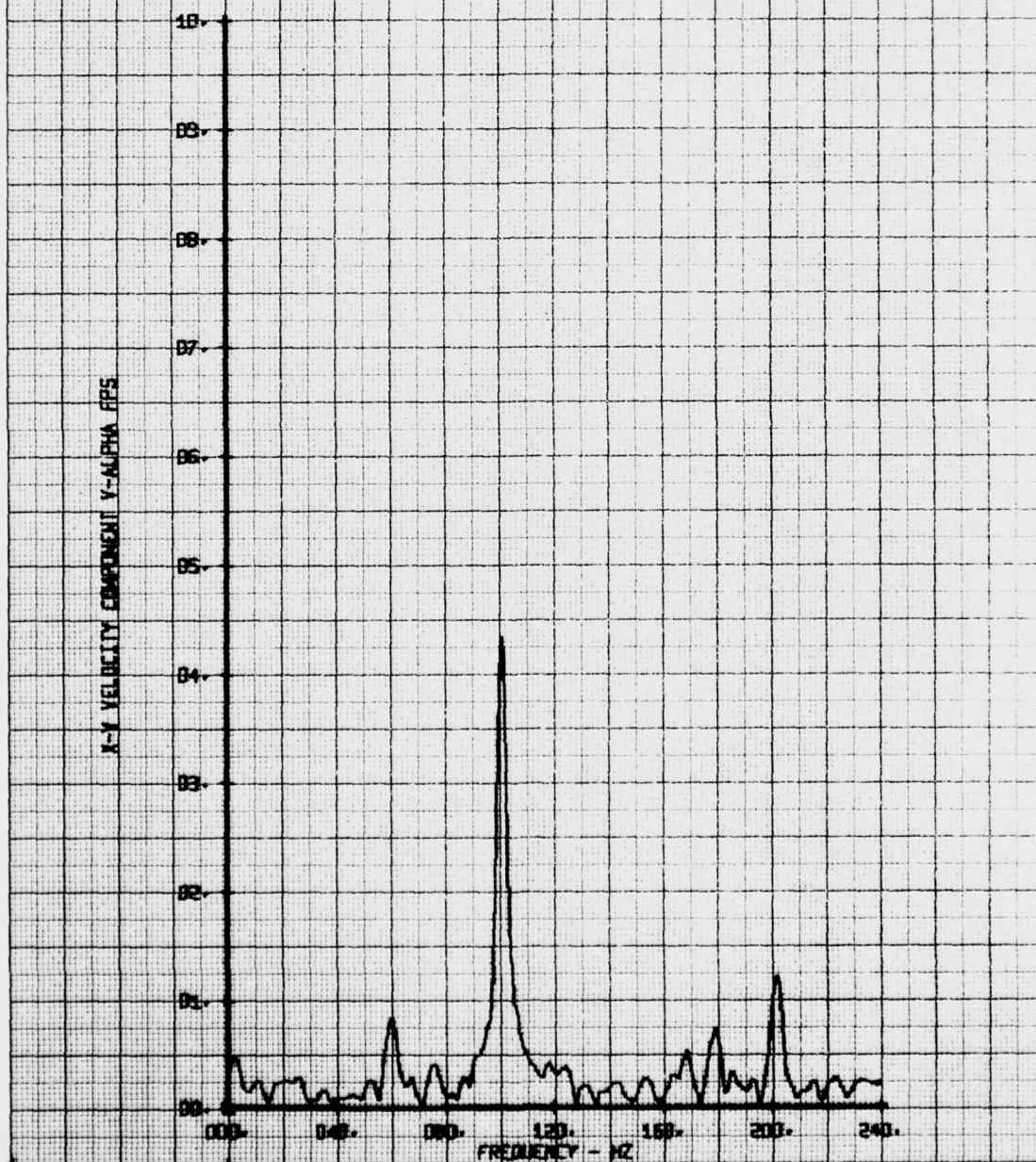
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



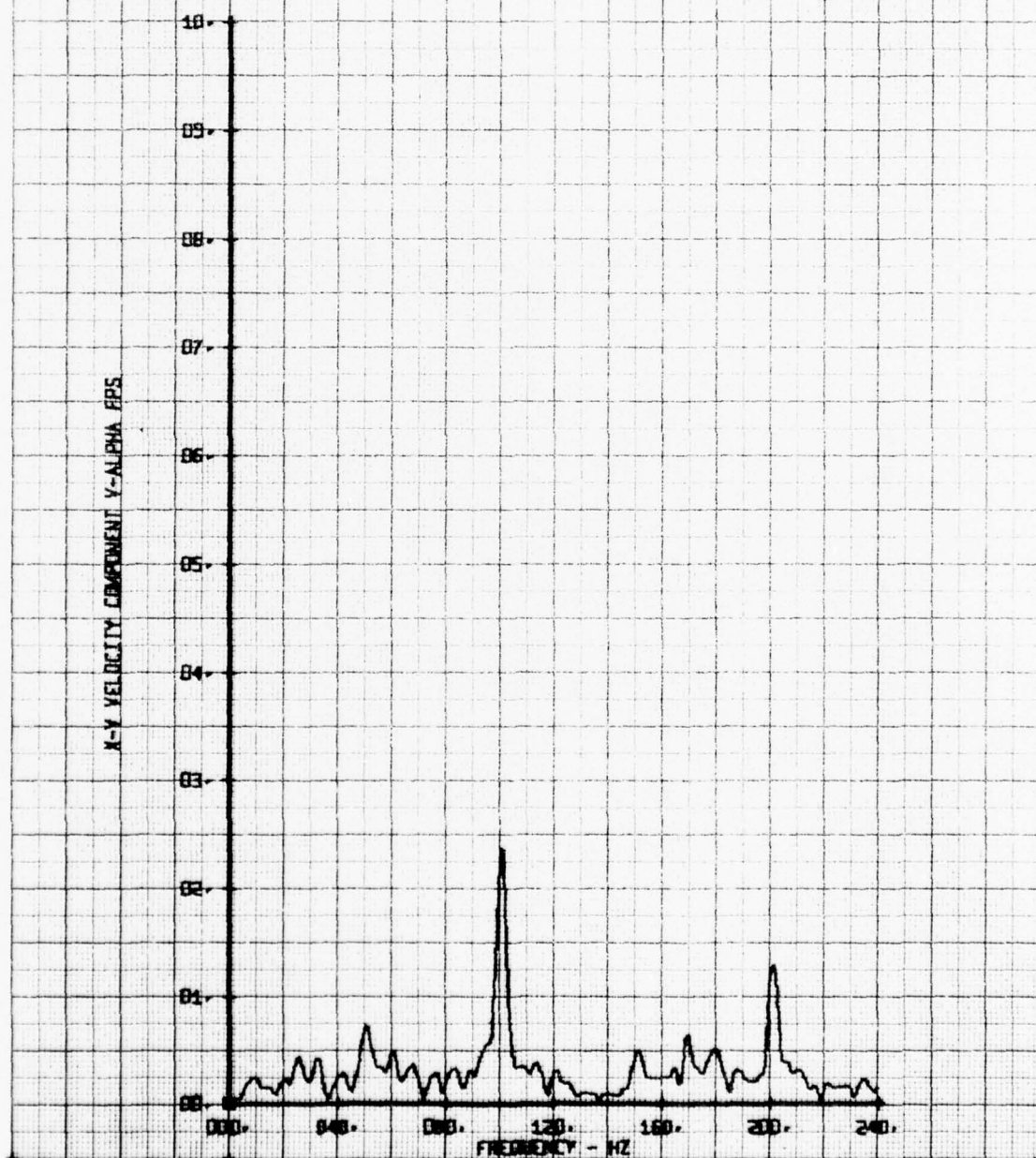
NOI FILM WAVE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR PAR. 150P
RUN 187 TP 6

LEGEND
CH PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT, W/C SHRO. CONTR PAR. 150P
RUN 187 TP 7

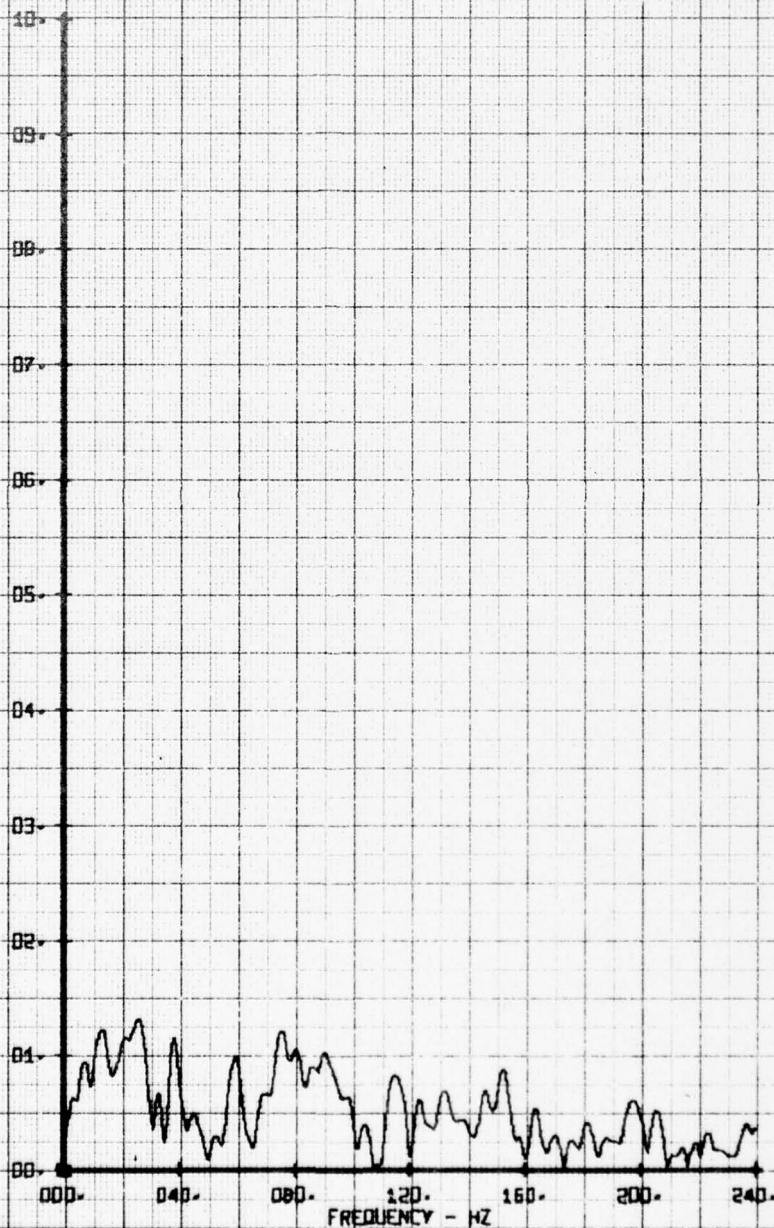
LEGEND
CH. PARAMETER
66 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR ECT. W/C SHRO. CONTR PAR. 150P
RUN 187 TP 2

LEGEND
CH PARAMETER
55 Y-BETA

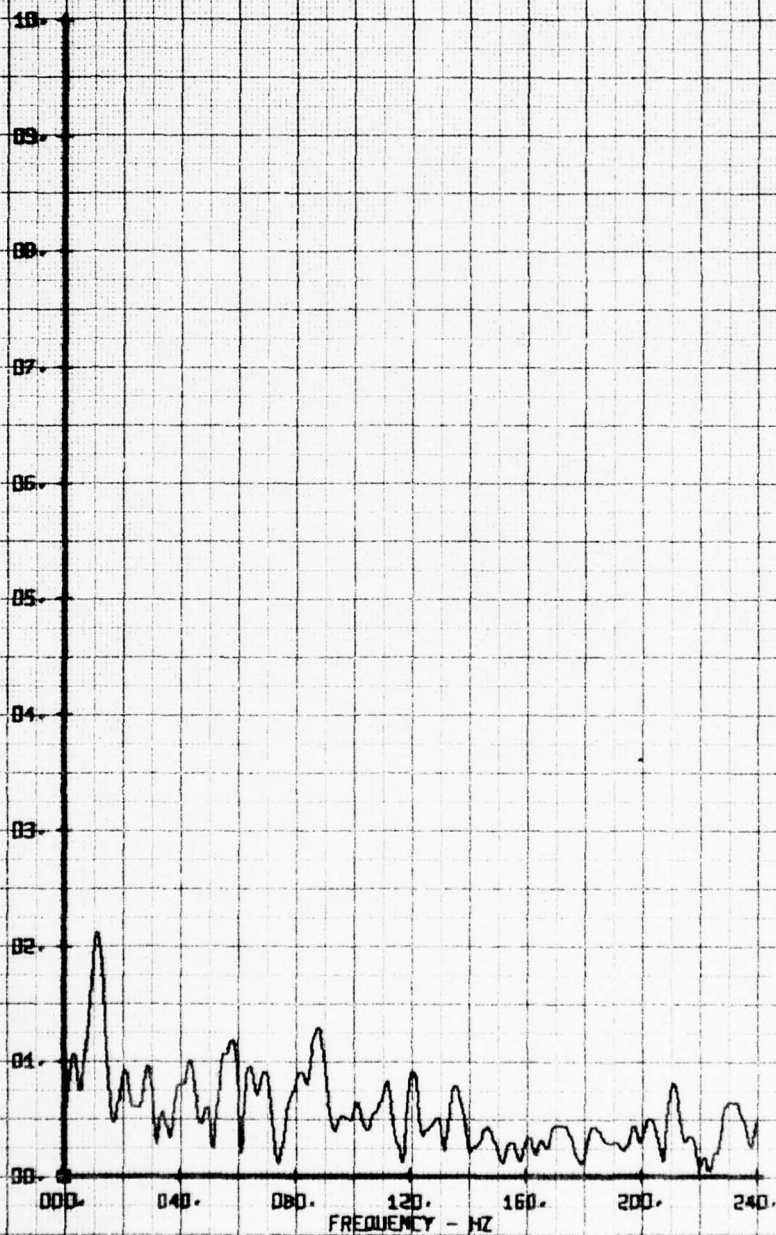
X-Z VELOCITY COMPONENT Y-BETA FPS



NOT FILM WAVE FREQUENCY ANALYSIS
AIR F.C.T. W/C SHRD. CONTR. PAR. 150P
RUN 187 TP 3

LEGEND
CH PARAMETER
PS V-BETA

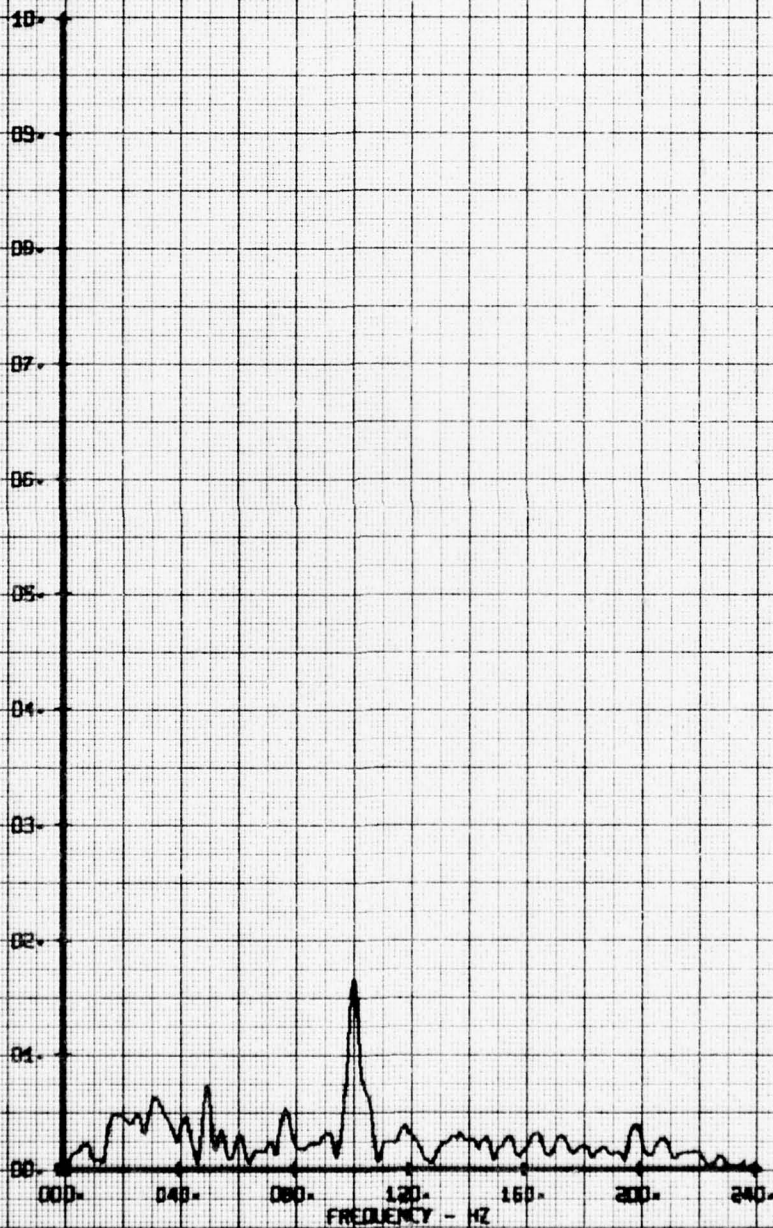
X-2 VELOCITY COMPONENT Y-BETA EPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 4

LEGEND
CH 65
PARAMETER
Y-BETA

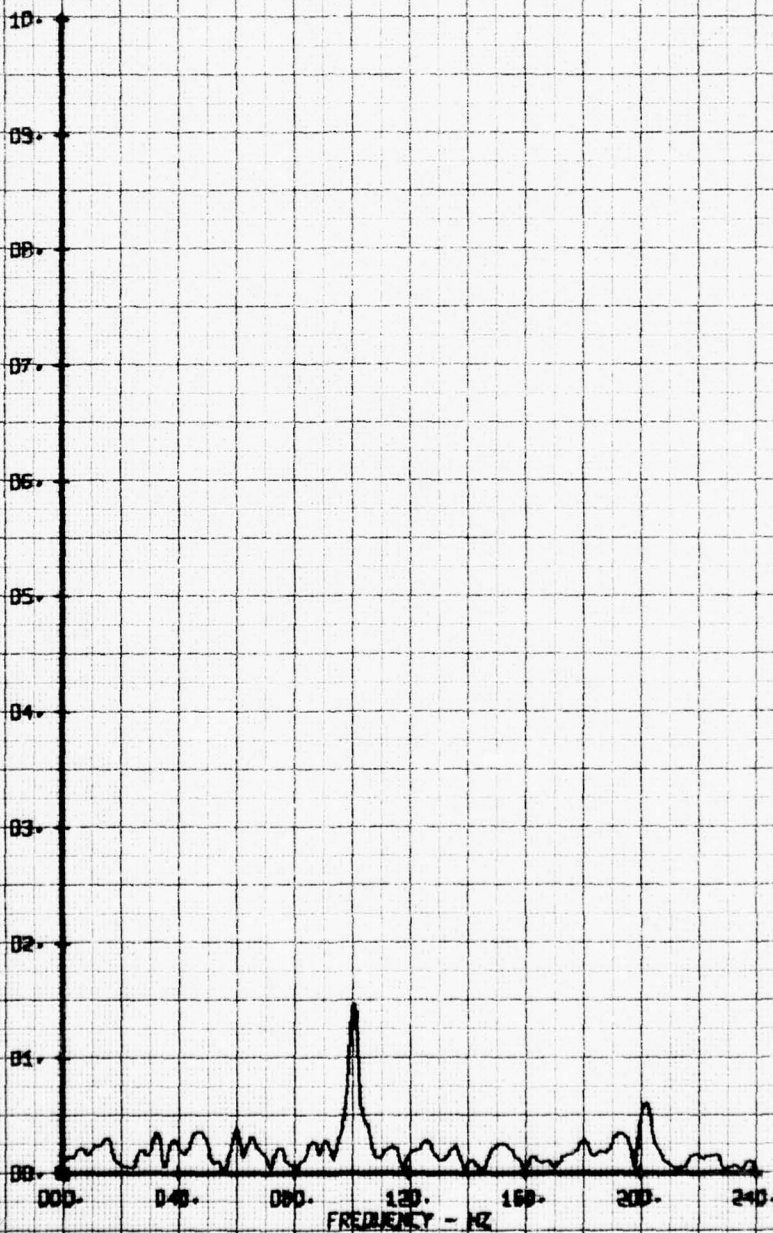
X-Z VELOCITY COMPONENT Y-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 5

LEGEND
CH 65 PARAMETER
V-BETA

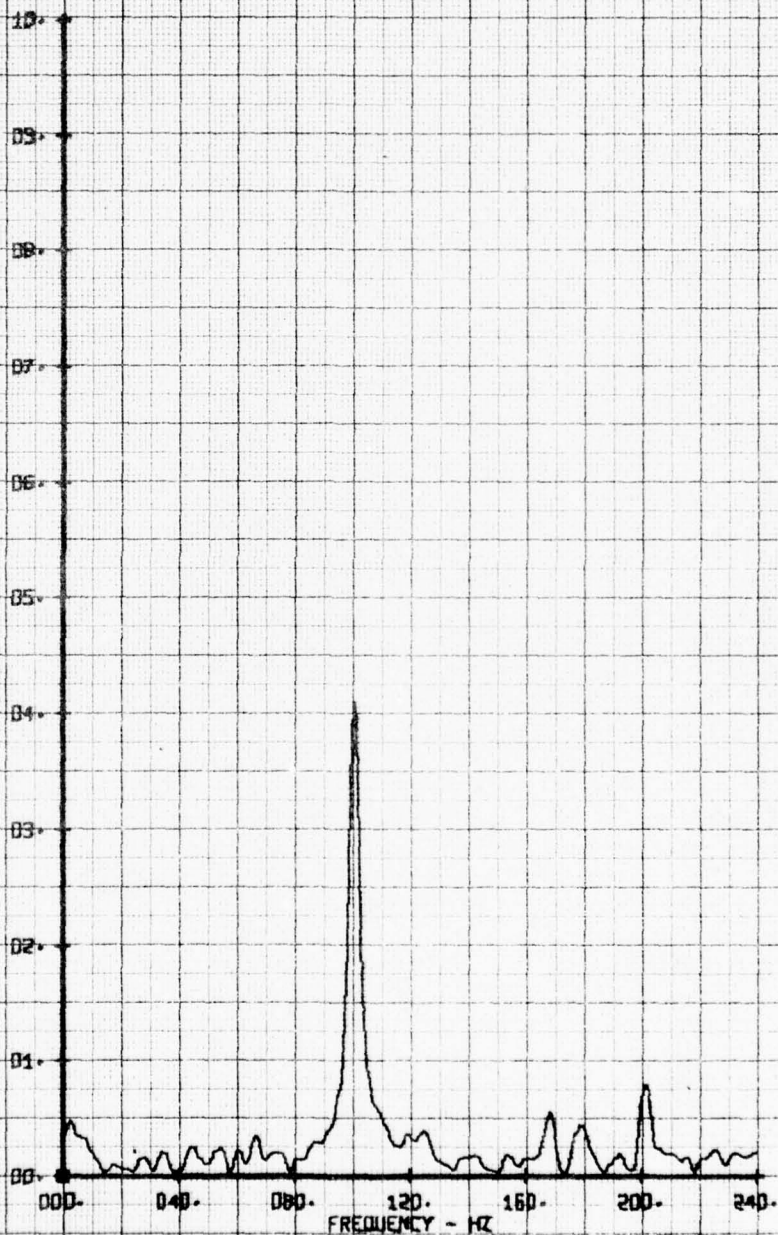
A-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 6

LEGEND
CH PARAMETER
65 V-BETA

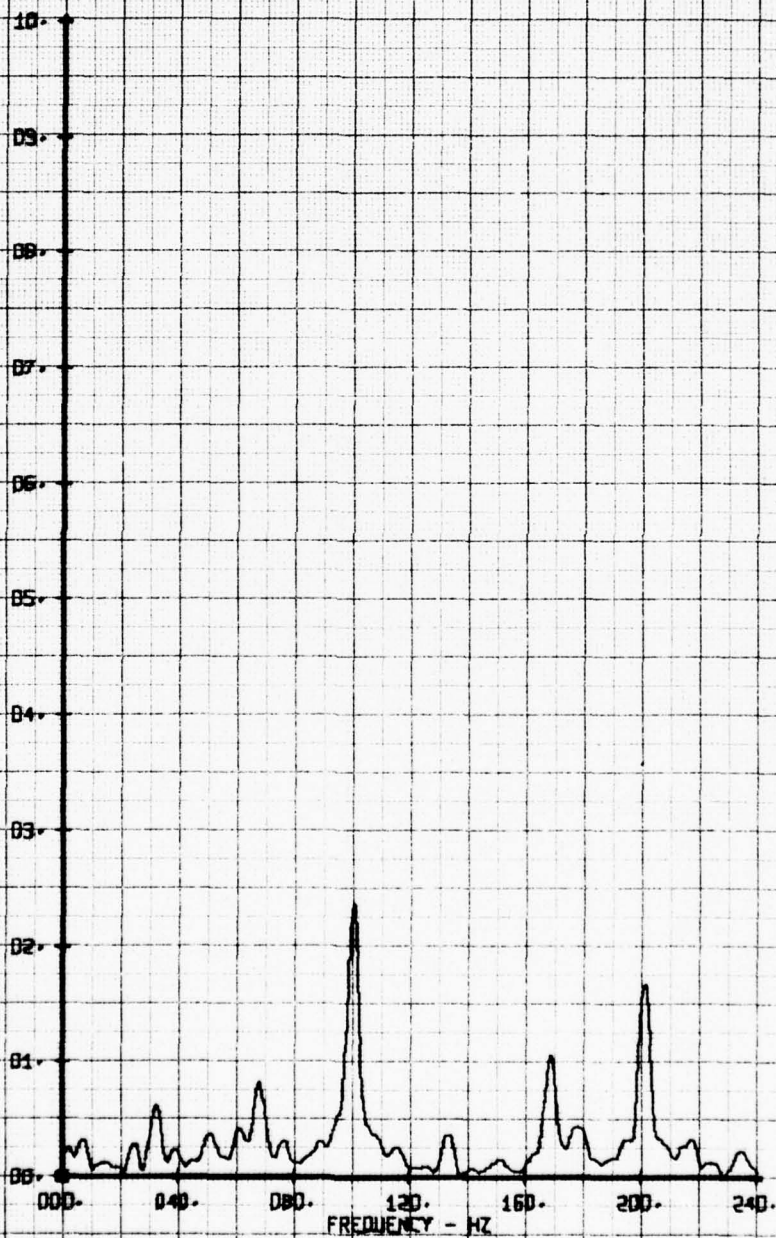
X-2 VELOCITY COMPONENT V-BETA FFS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. W/C SHRO. CONTR. PAR. 150P
RUN 187 TP 7

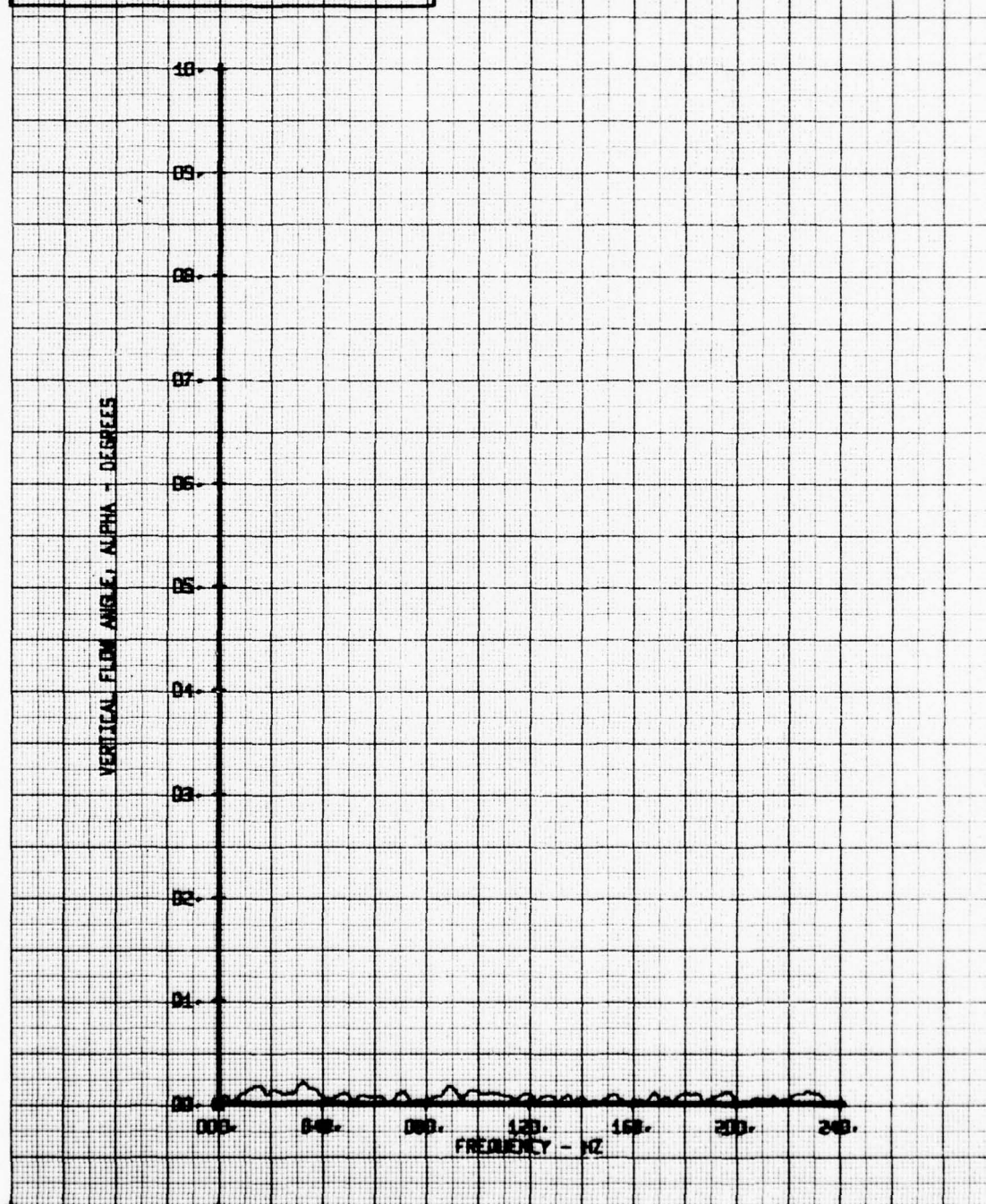
LEGEND
CN PARAMETER
65 V-BETA

X-2 VELOCITY COMPONENT V-BETA FPS



NOT FILM WARE FREQUENCY ANALYSIS
AIR ENCT. ESTIMATED DUCT DPST
RUN 203 TP 5

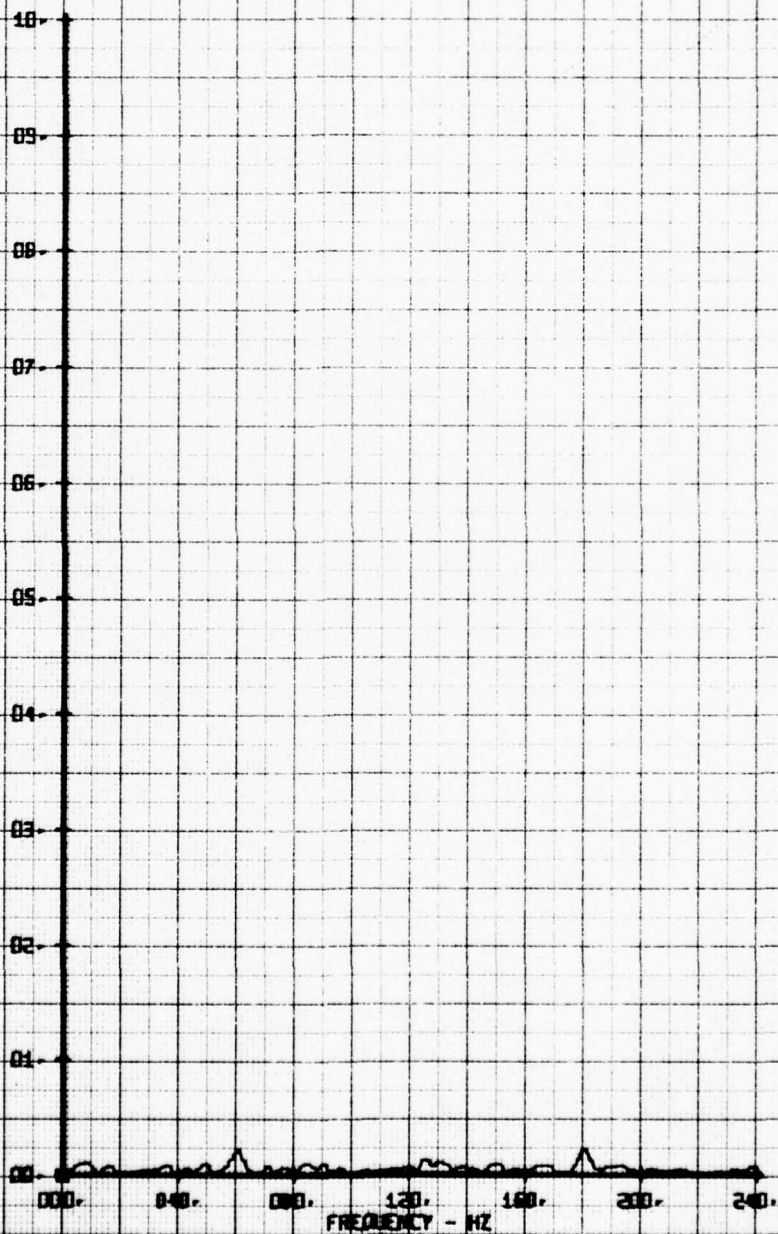
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECT. BIFURCATED DUCT DPST
RUN 203 TP 6

LEGEND
CH 66 PARAMETER
ALPHA

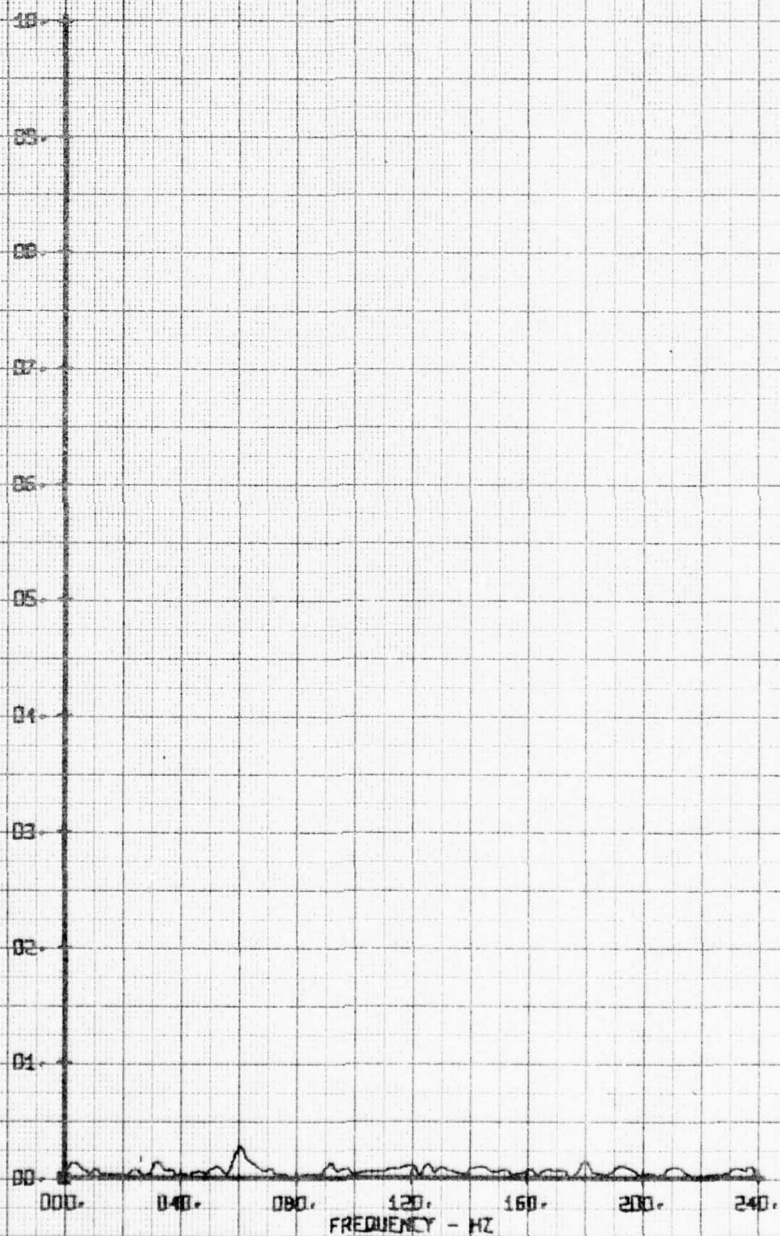
VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
ATO EXT. STIMULATED QUIC OPS
RUN 203 TP 7

LEGEND
CH PARAMETER
55 ALPHA

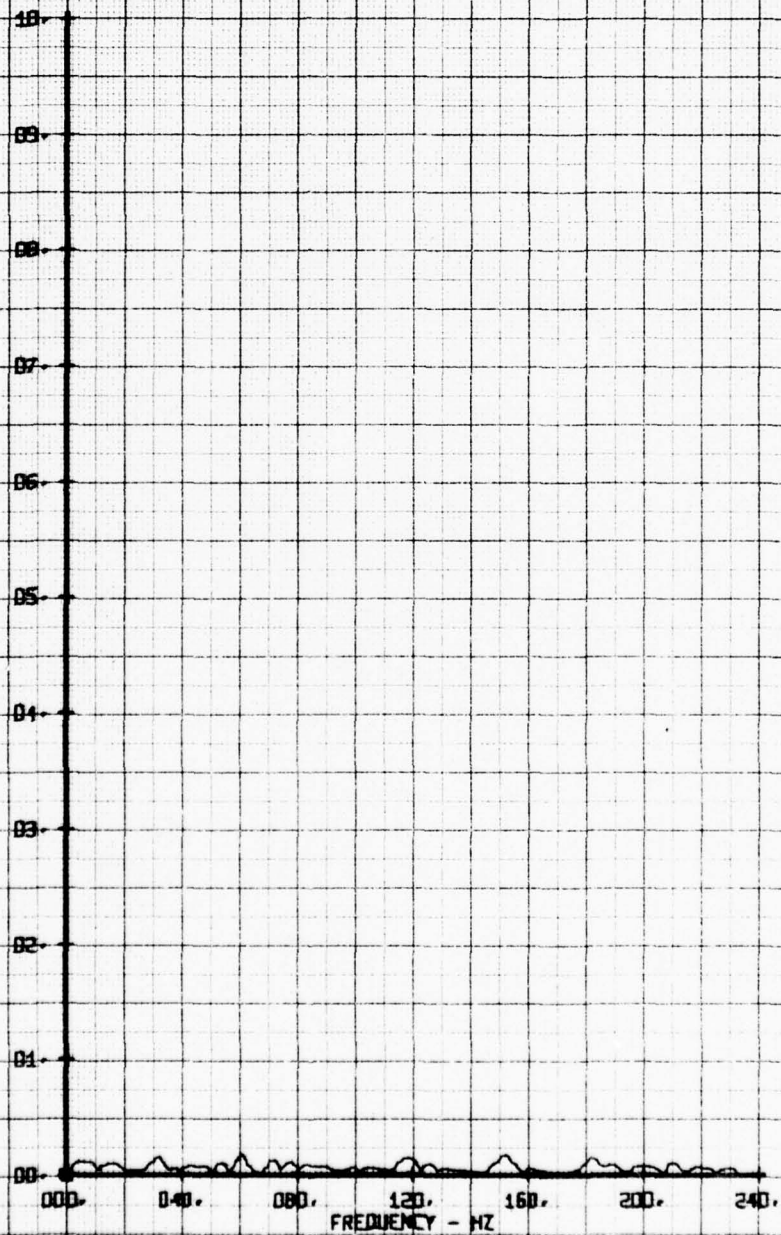
VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAVE FREQUENCY ANALYSIS
AIR ENT. ESTIMATED ONLY OPSI
RUN 203 TP 8

LEGEND
CH PARAMETER
66 ALPHA

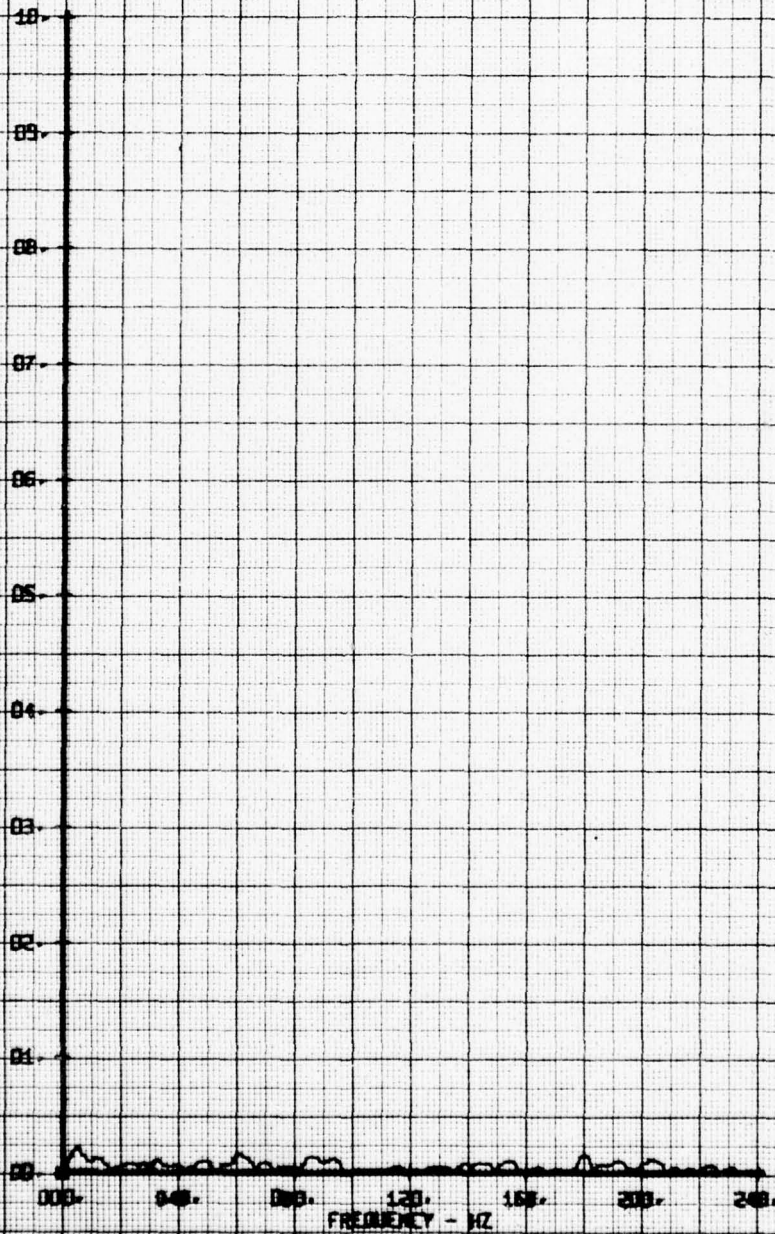
VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW, BIFURCATED DUCT DPST
RUN 203 TP 9

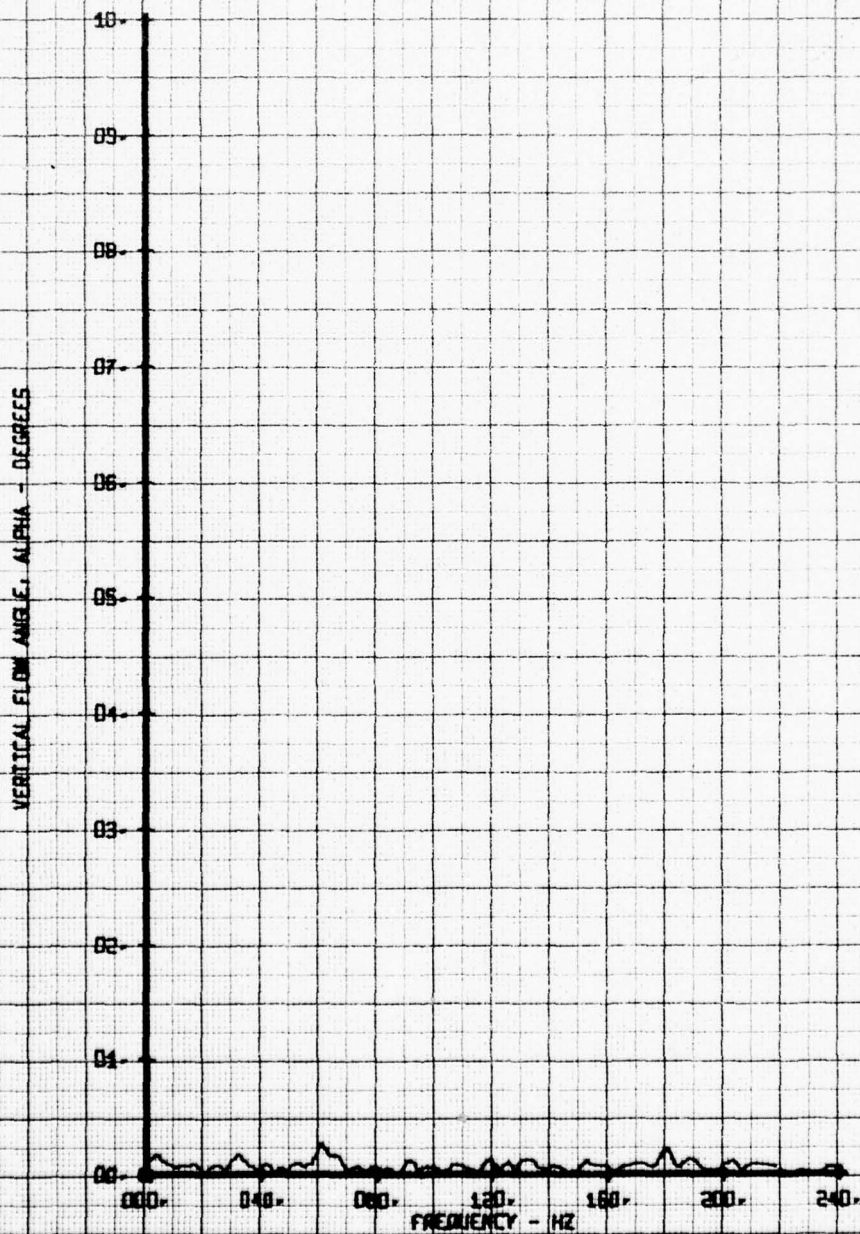
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FILM ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT DPST
RUN 203 TP 10

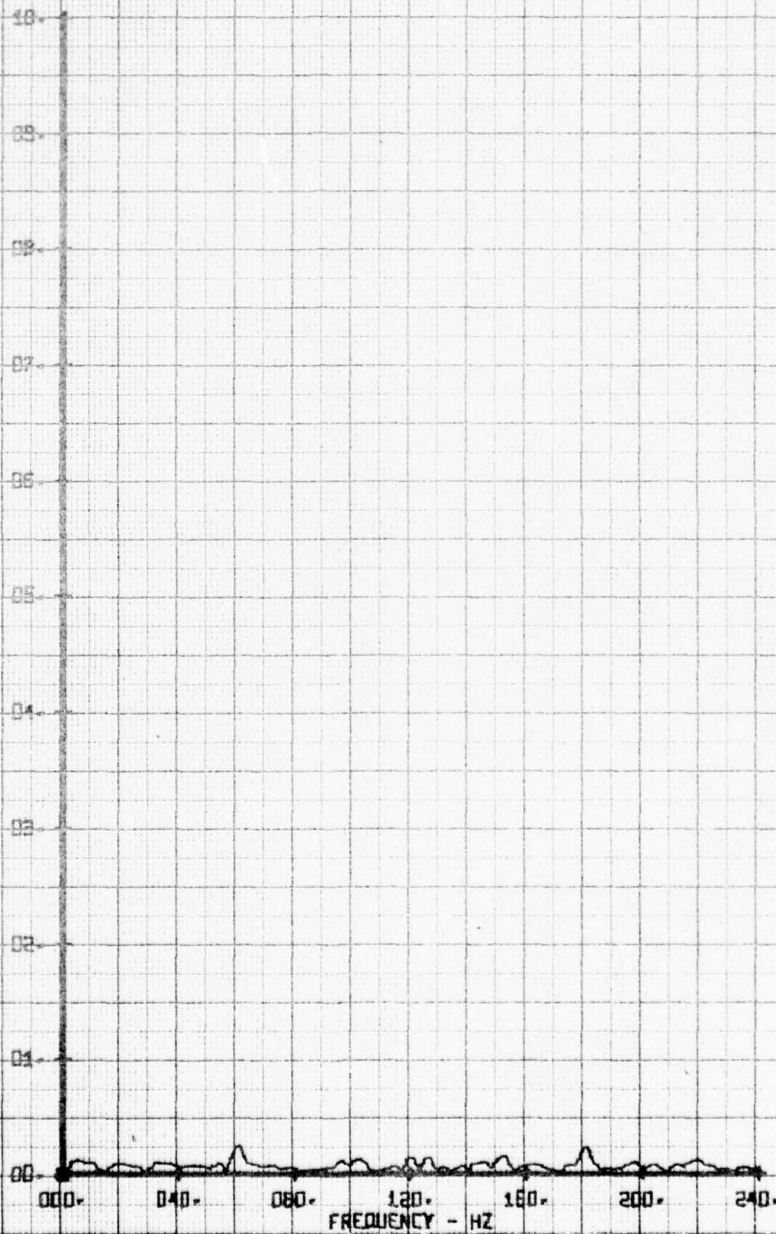
LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR 5.17 - BIFURCATED DUCT W/ST
RUN 203 TP 11

LEGEND
CH PARAMETER
GB ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES

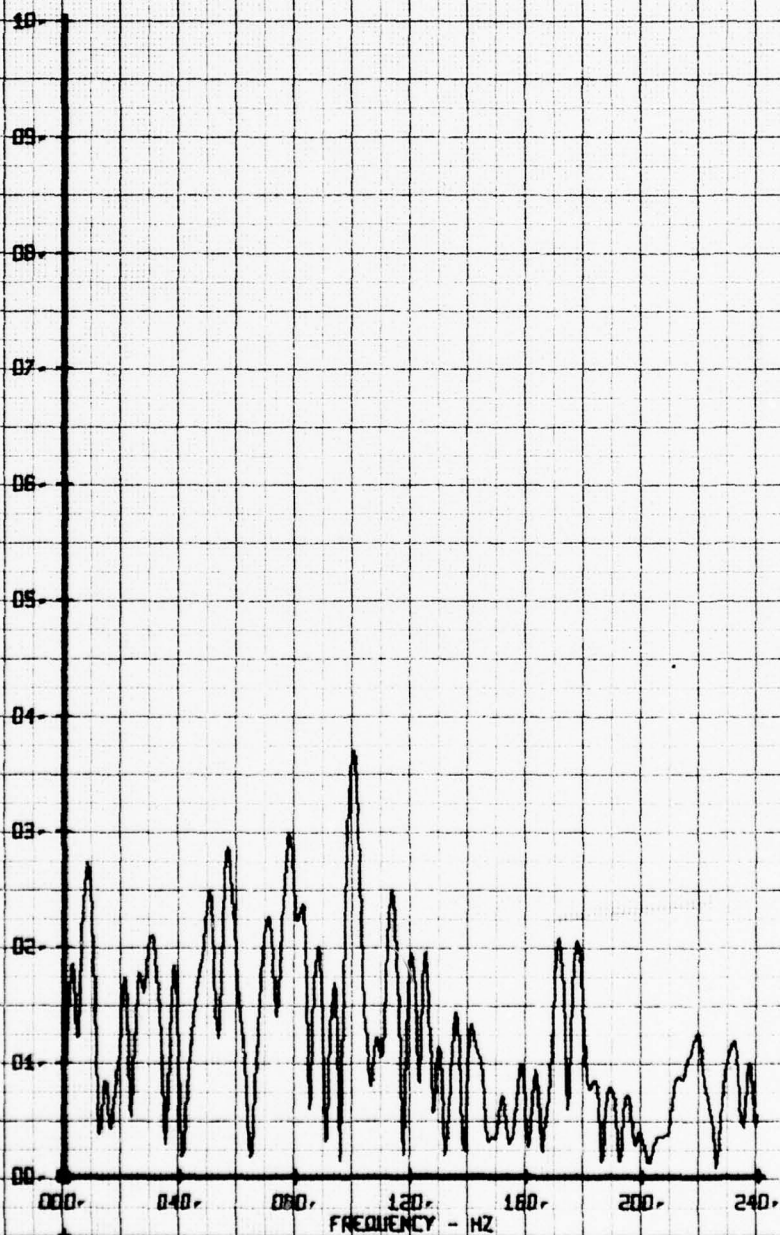


NOT FILM WAKE FREQUENCY ANALYSIS
AIR CFT. BIFURCATED DUCT DPST
RUN 203 TP 5

LEGEND

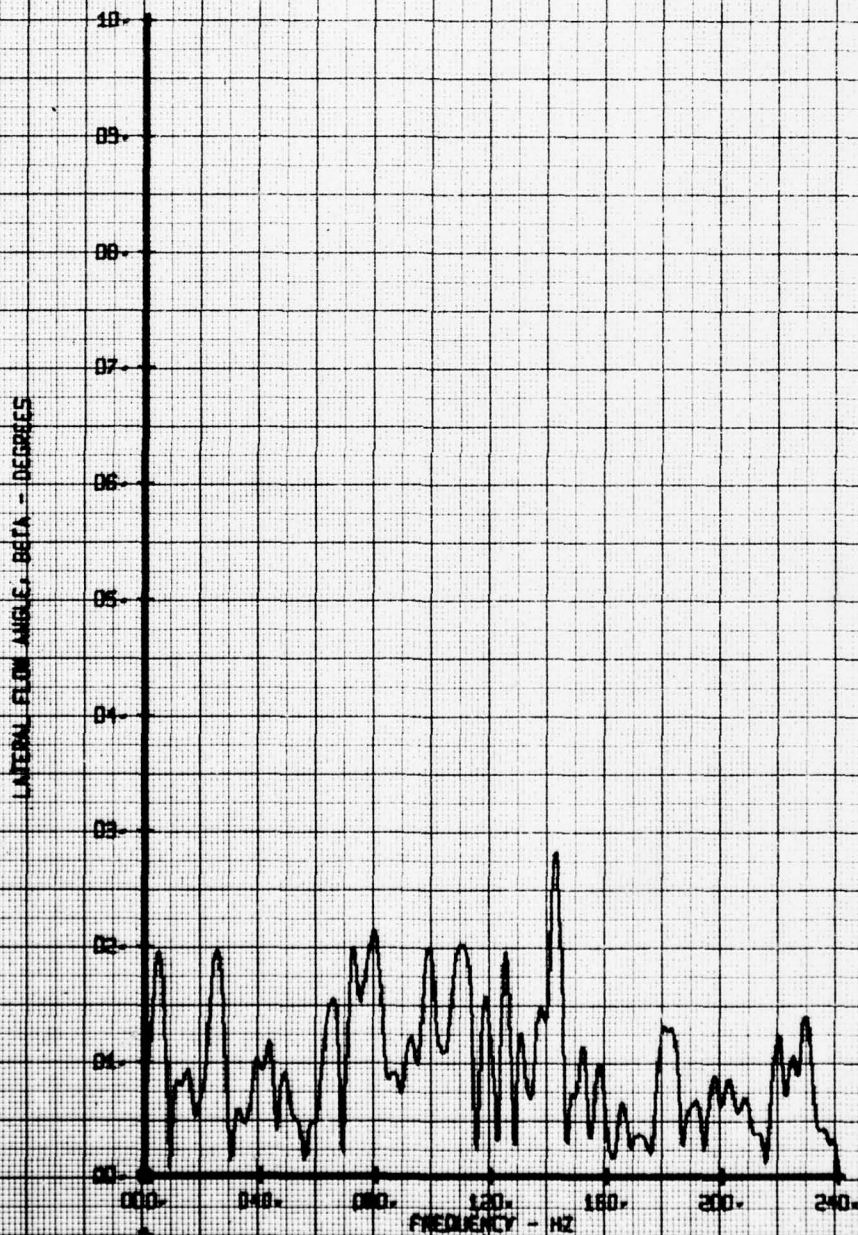
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR E.C.Y. - BIFURCATED DUCT OPST
RUN 203 TP 6

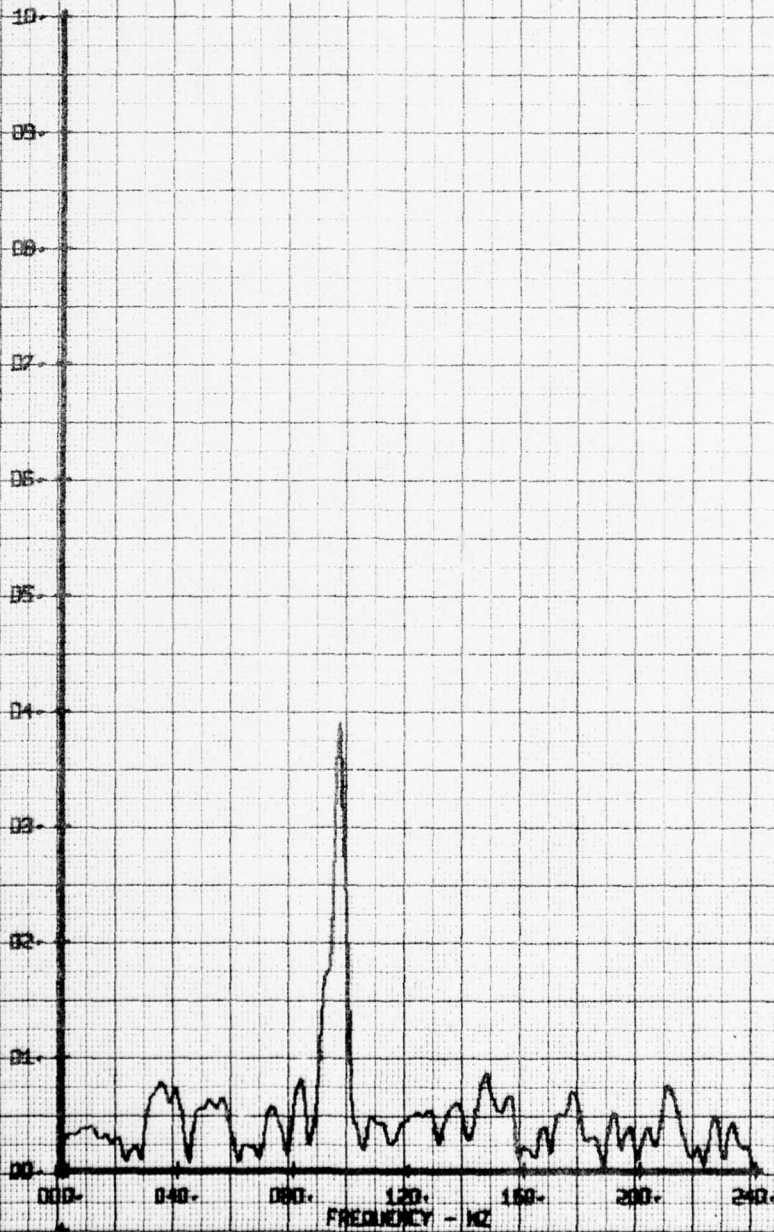
LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW: RECTANGULAR DUCT DPG
RUN 203 TP 7

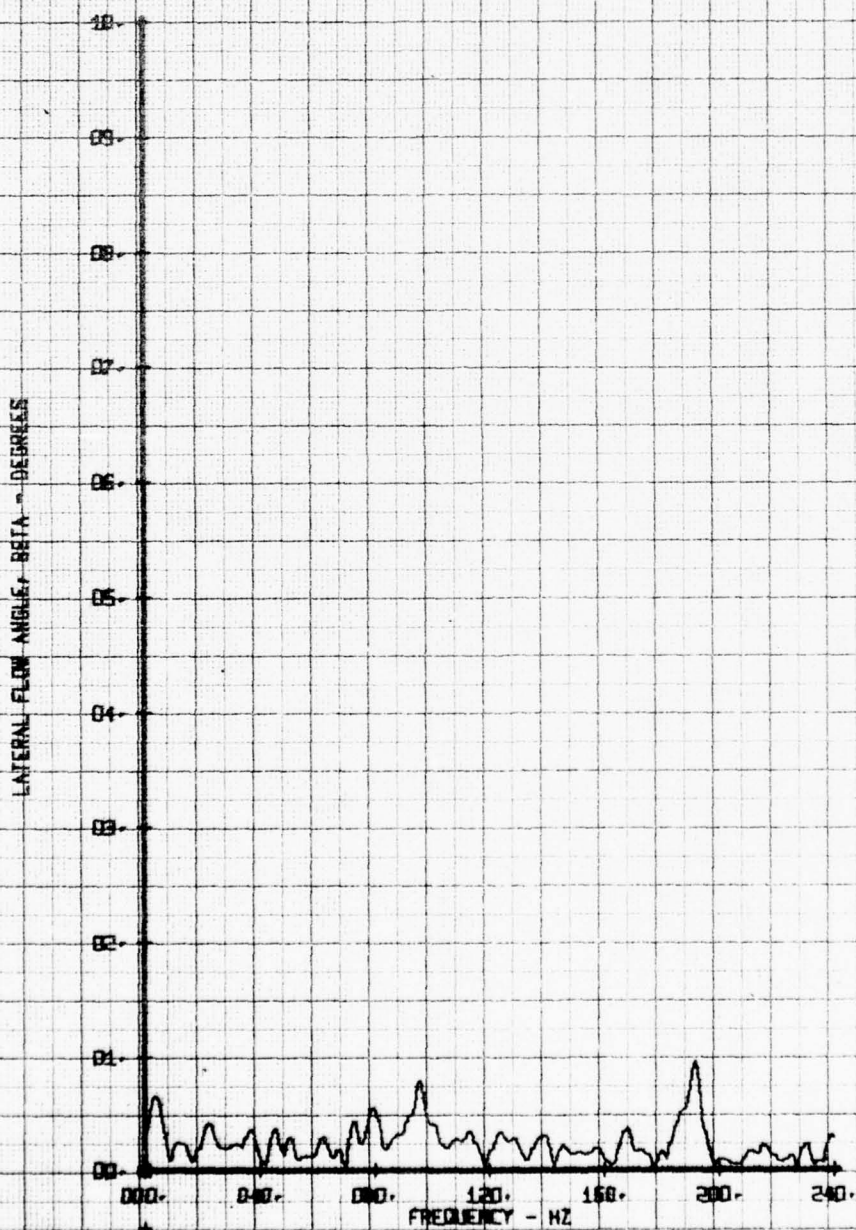
LEGEND
CH PARAMETER
69 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAVE FREQUENCY ANALYSIS
ATR E.M.T. STIMULATED DUCT OPSX
RUN 203 TP 8

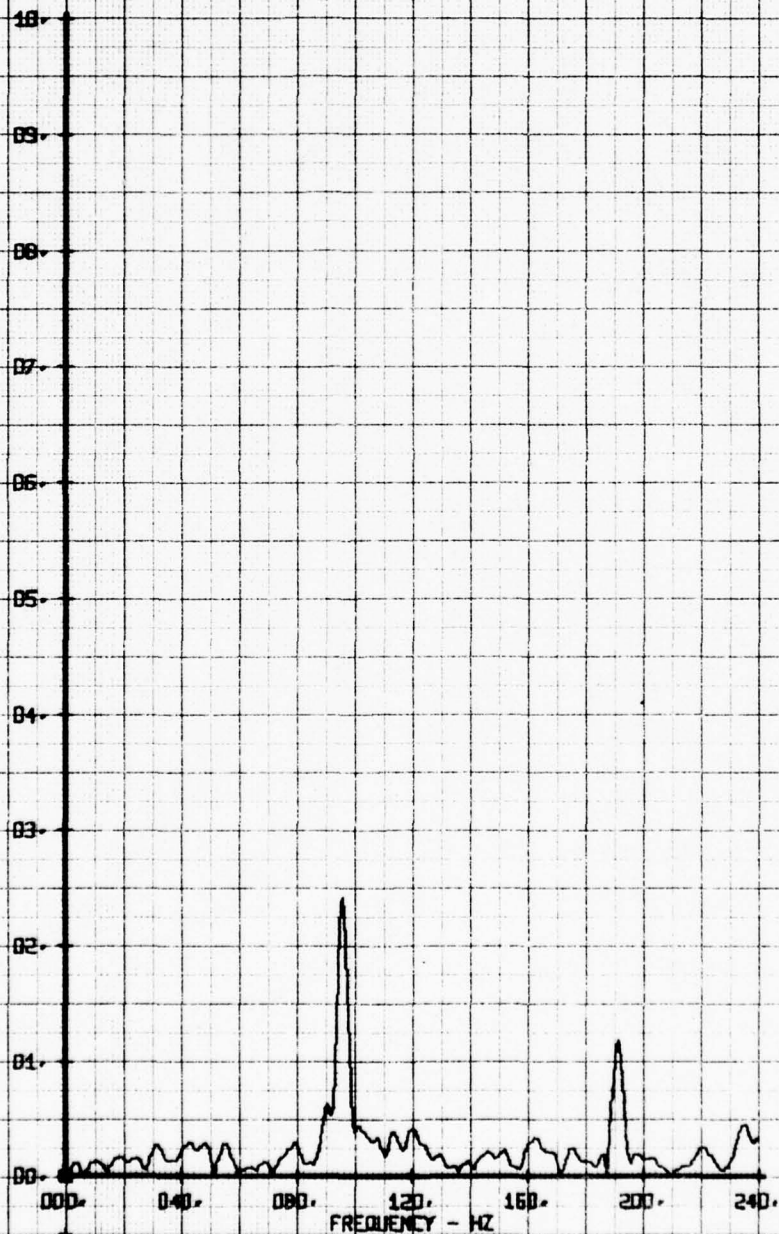
LEGEND
CH PARAMETER
65 BETA



NOY FILM WAKE FREQUENCY ANALYSIS
AIR FLY. RIFINATED DUCT DPST
RUN 203 TP 9

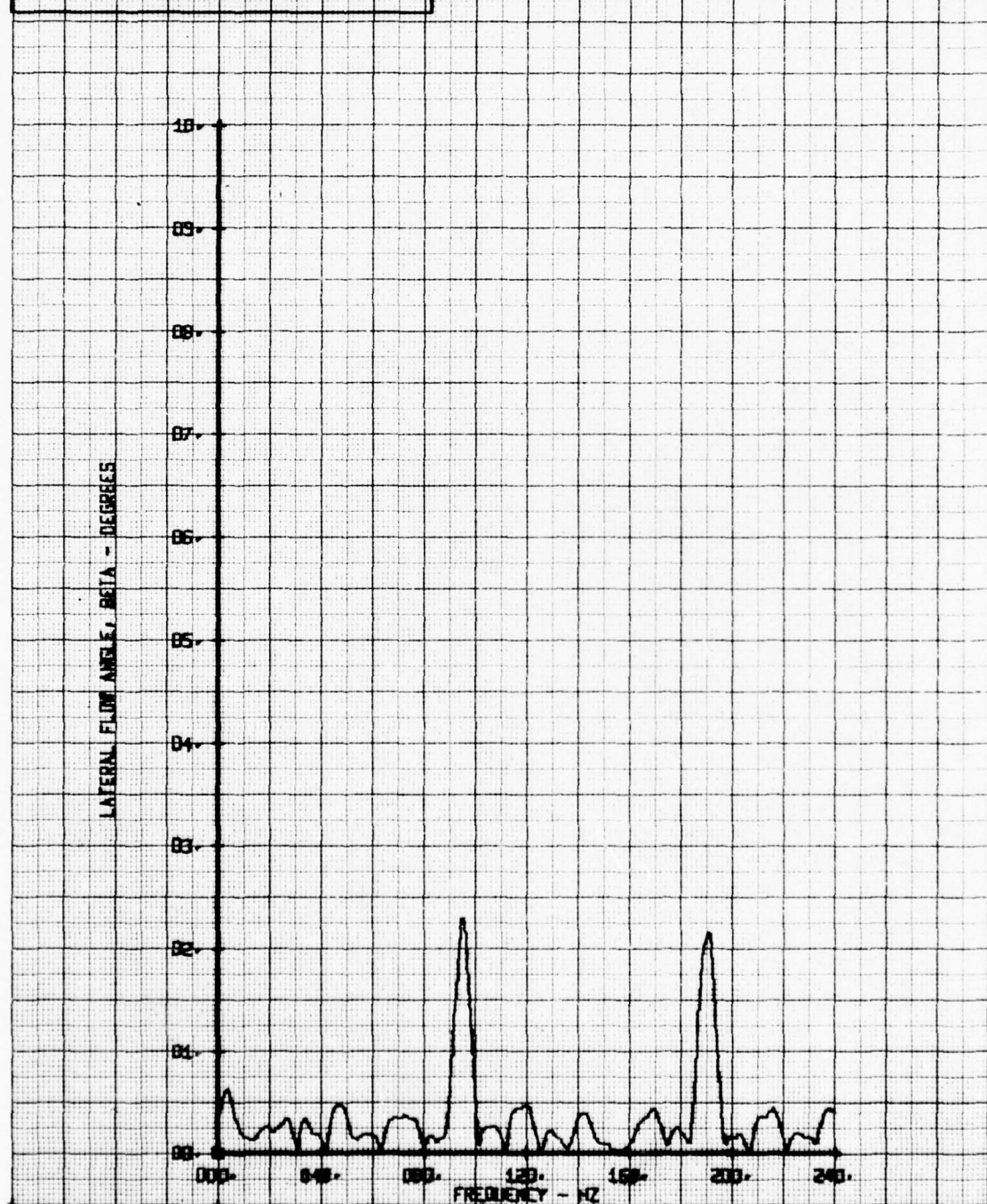
LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
ATR ENCT. RIBRIBATED DUCT DP57
RUN 203 TP 10

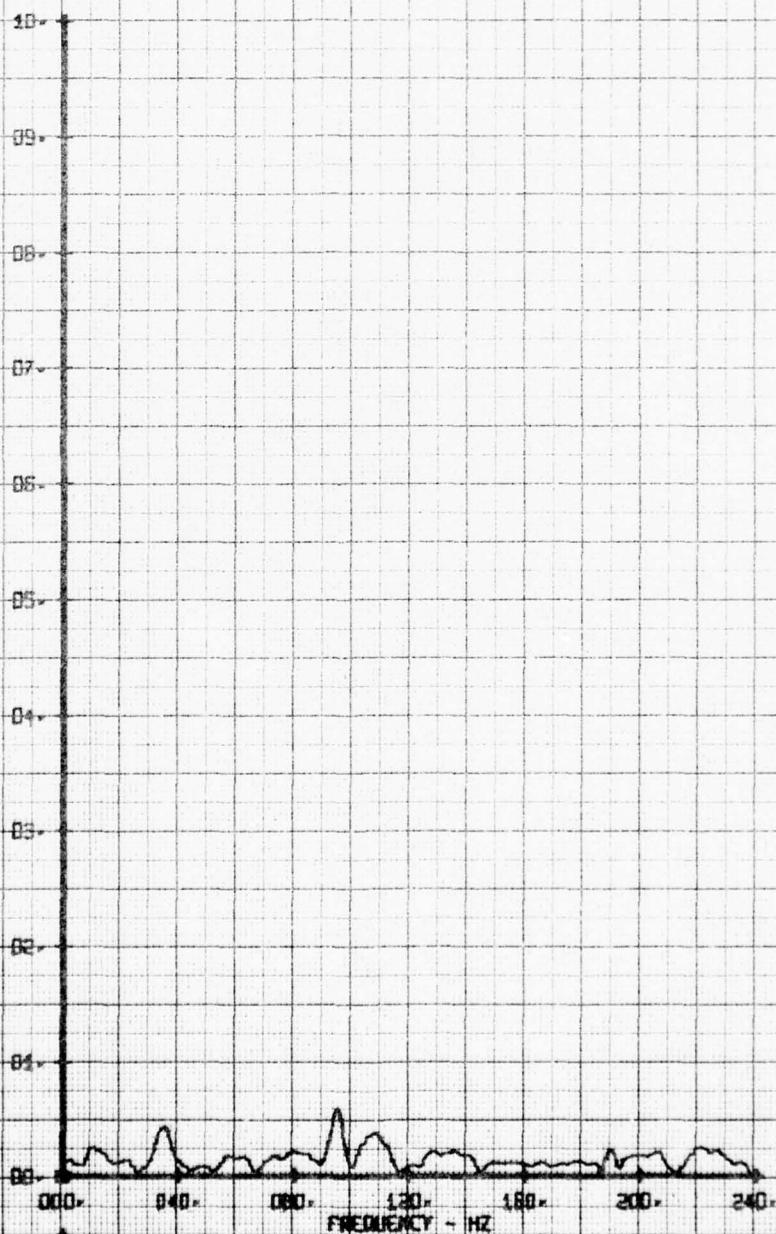
LEGEND
CH 65
PARAMETER
BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT, BIFURCATED DUCT OPST
RUN 203 TP 11

LEGEND
CH. PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



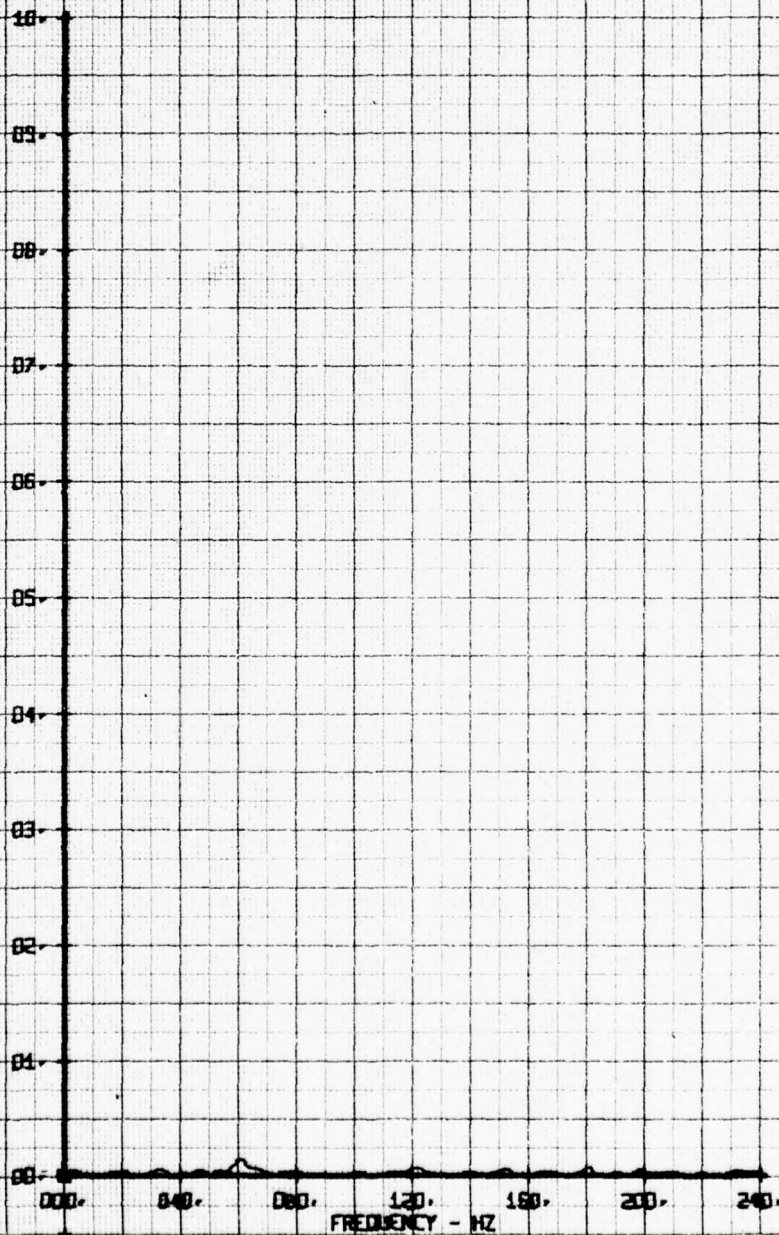
346

SET 76
BVWT 159

NOT FILM WAVE FREQUENCY ANALYSIS
AIR EJECT. SUPPLEMENTED DUCT DPST
RUN 203 TP 5

LEGEND
CH PARAMETER
66 V-ALPHA

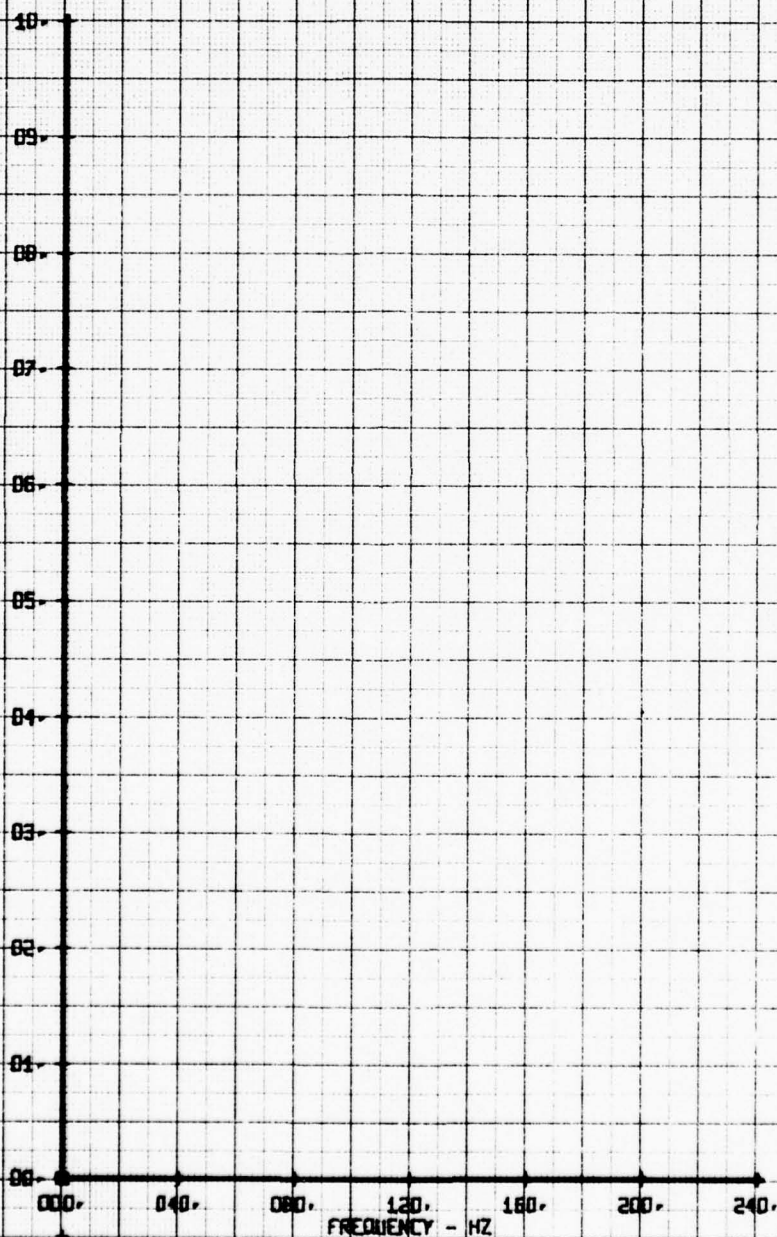
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FCT. BIFURCATED DUCT DPST
RUN 203 TP 6

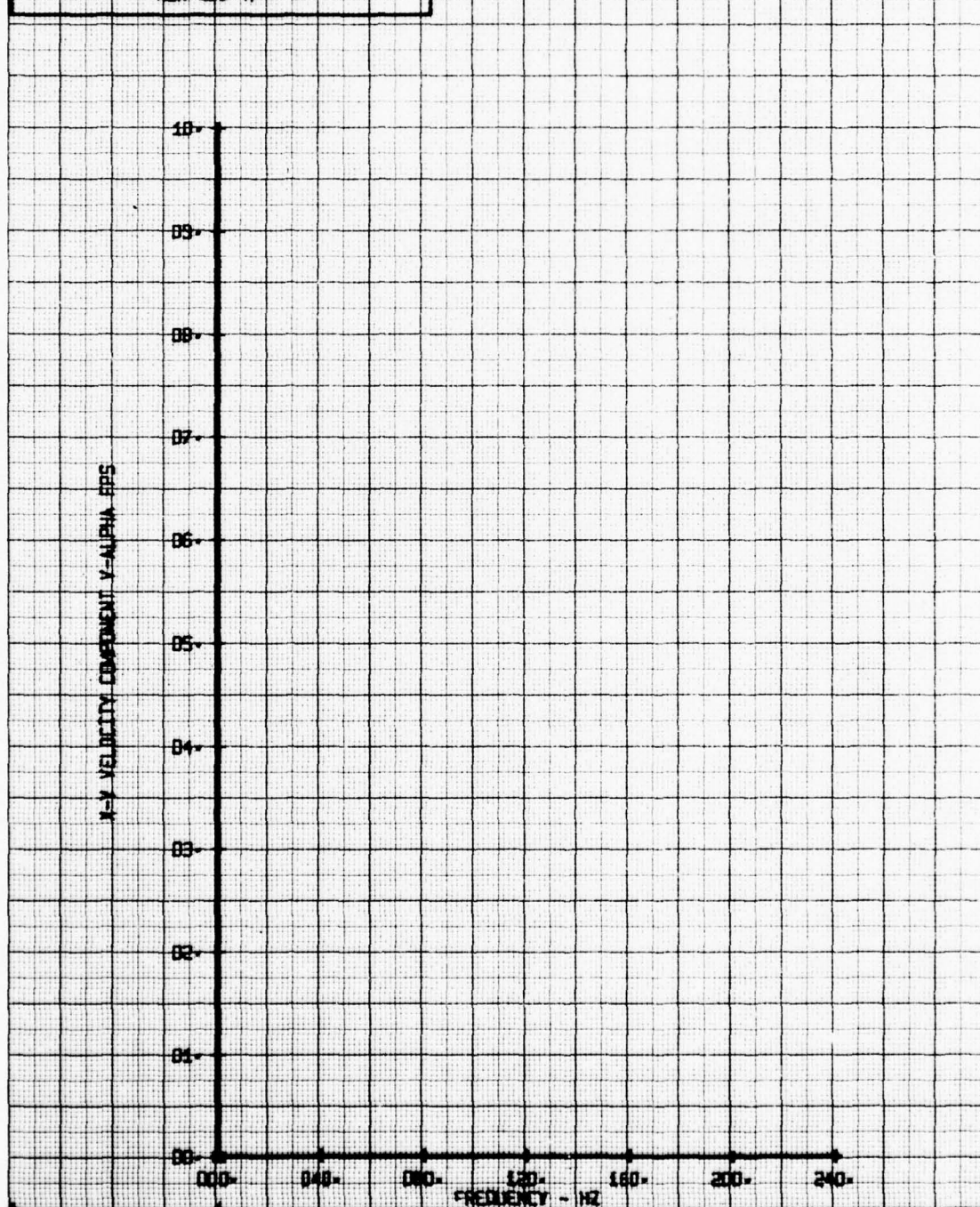
LEGEND
CH 66
PARAMETER
V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA EPS



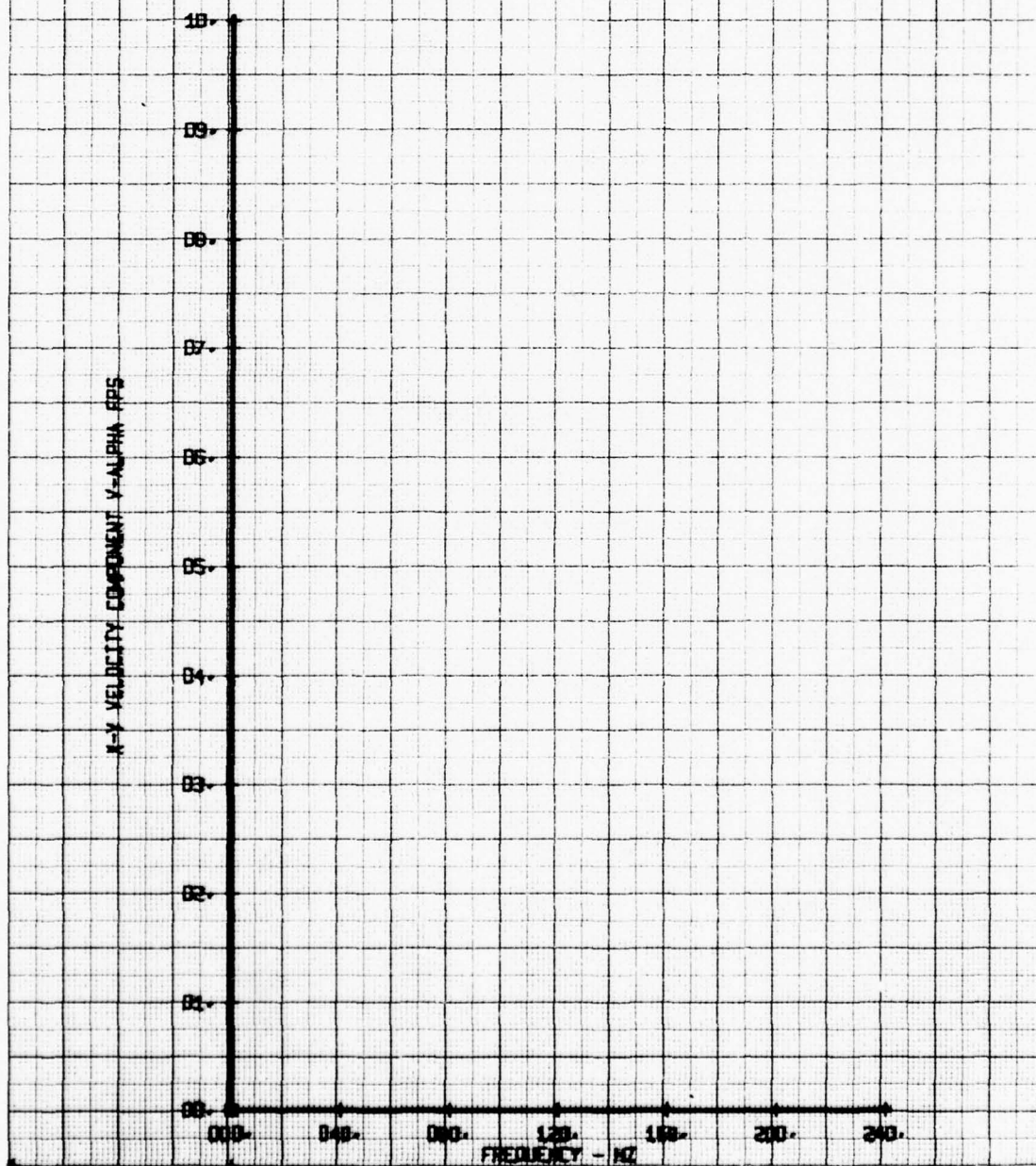
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT, BIFURCATED DUCT OPST
RUN 203 TP 7

LEGEND
CH PARAMETER
66 Y-ALPHA



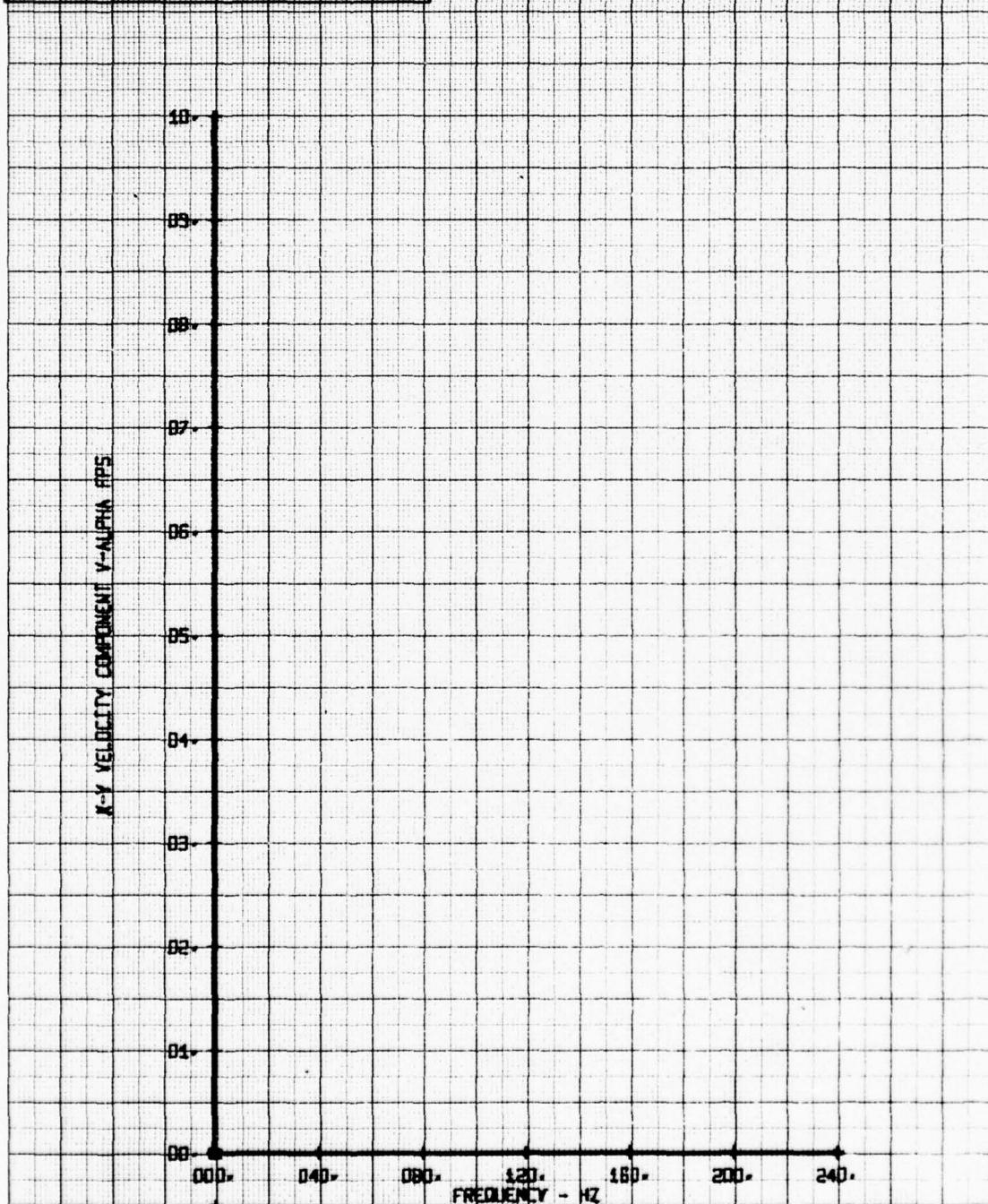
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT OP51
RUN 203 TP 8

LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW: STIRATED ONET DPST
RUN 208 TP 9

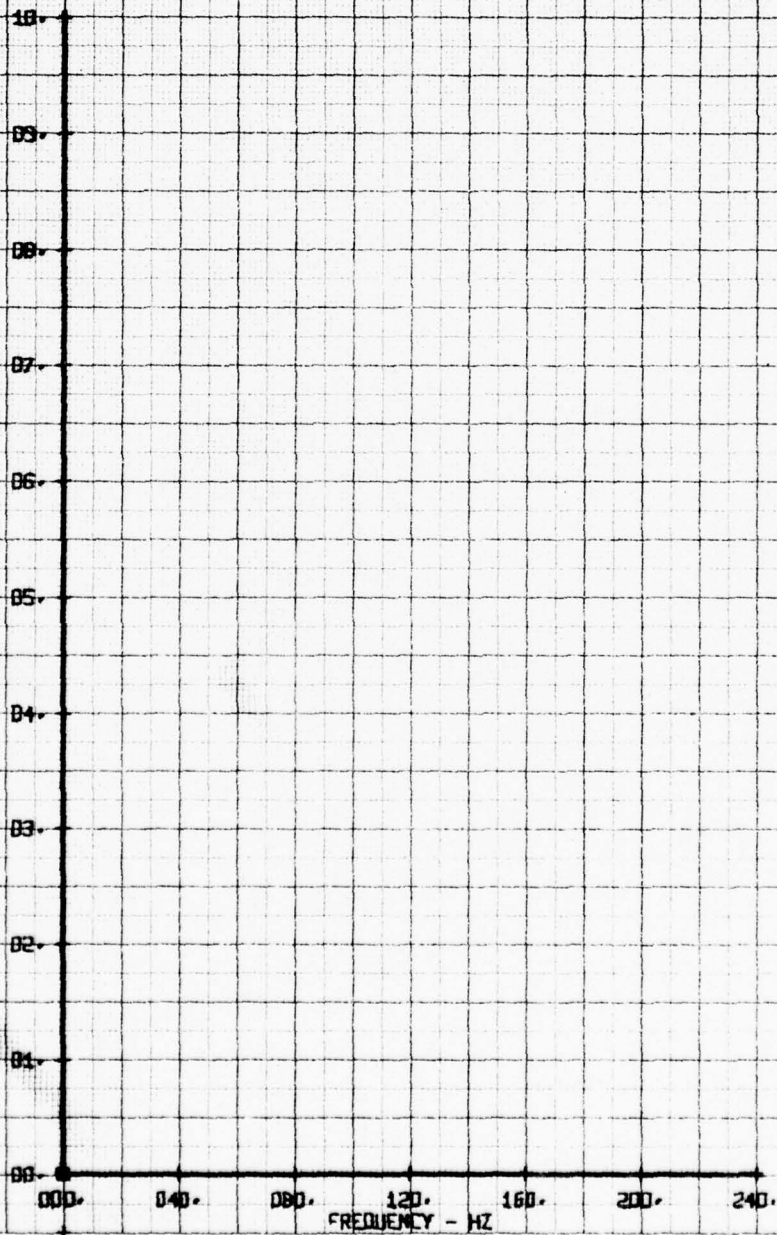
LEGEND
CH PARAMETER
56 Y-ALPHA



HOY FILM WAKE FREQUENCY ANALYSIS
AIR ENT. RIBBONATED DUCT OPST
RUN 203 TP 10

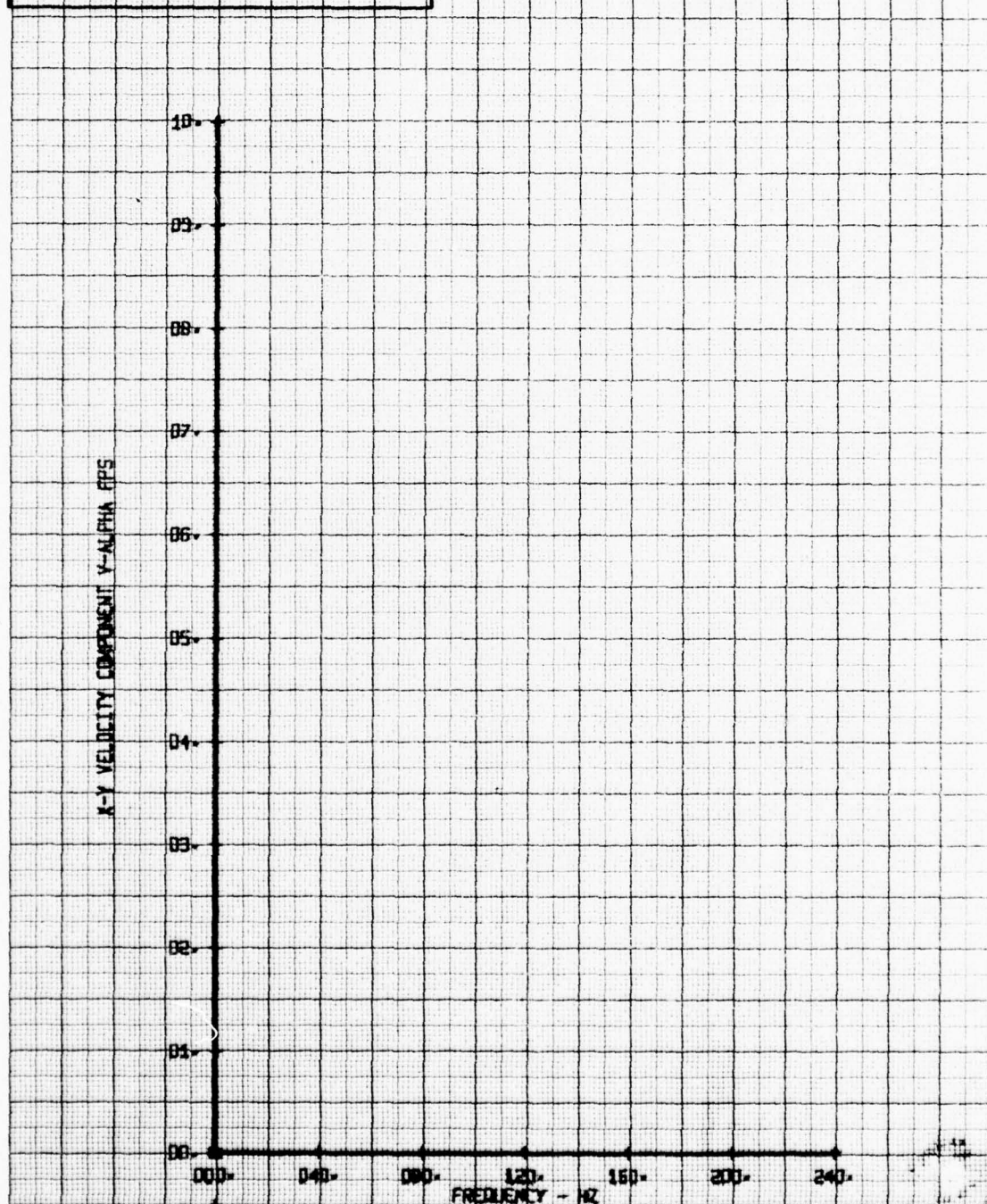
LEGEND
CH 66
PARAMETER
V-ALPHA

X-Y VELOCITY COMPONENT V-ALPHA FPS



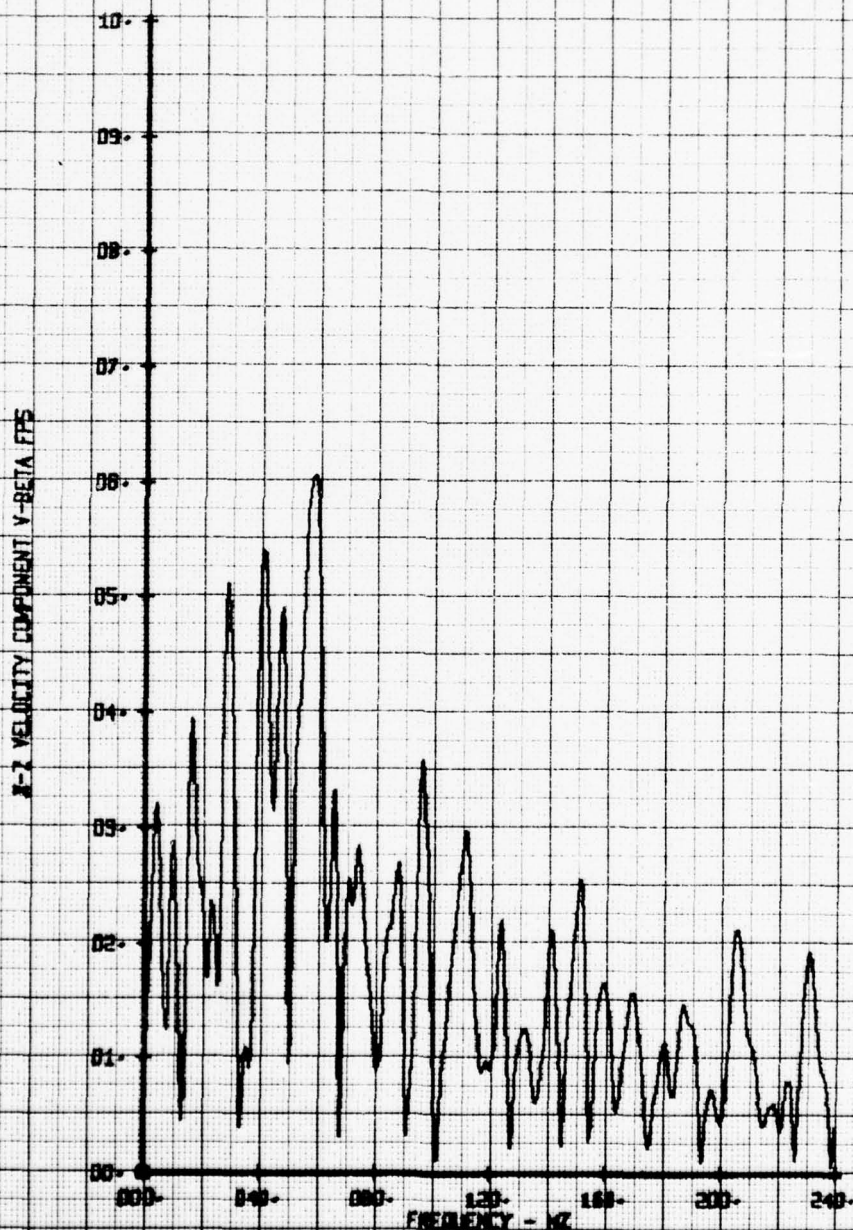
HOT FILM WAKE FREQUENCY ANALYSIS
AIR ENY. BIFURCATED DUCT DP51
RUN 203 TP 11

LEGEND
CH PARAMETER
56 V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT - BIFURCATED DUCT DP51
RUN 203 TP 6

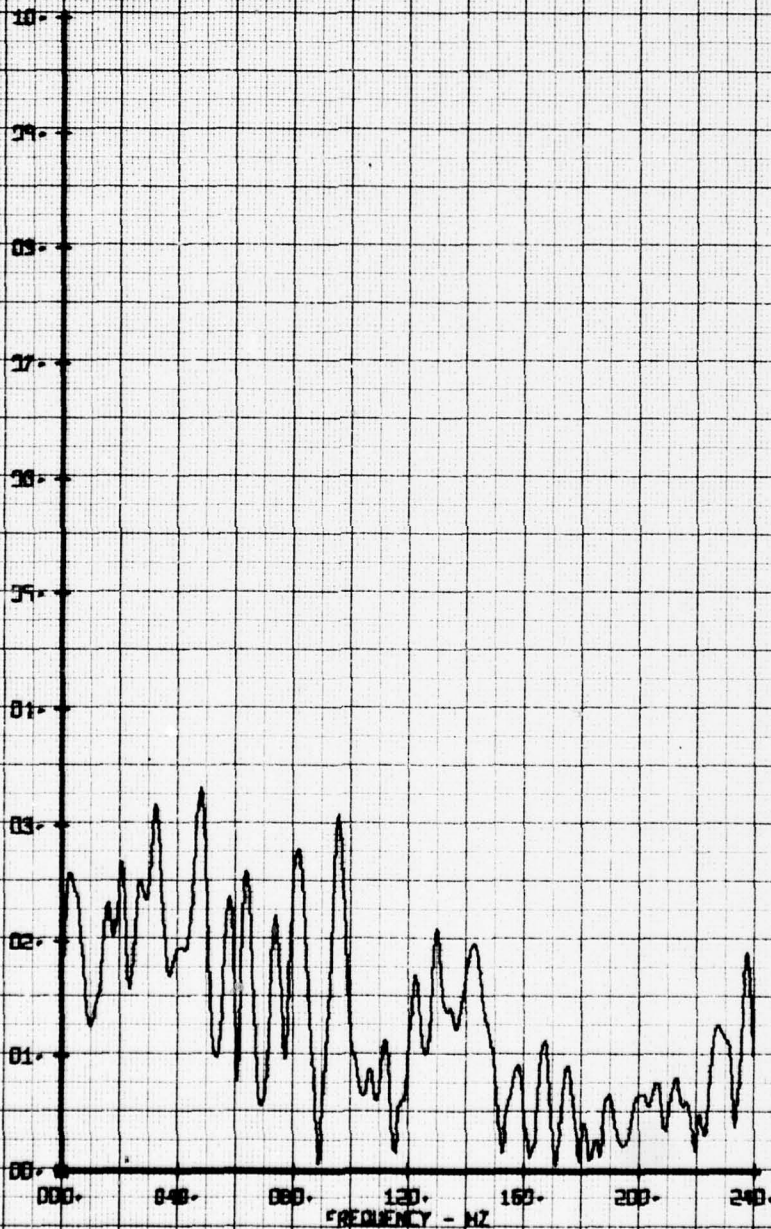
LEGEND
EN PARAMETER
65 V-BETA



HOT FILM WAVE FREQUENCY ANALYSIS
 AIR FLOW - SUPPLEMENTARY DUCT OPER
 9.2N 200 TP

LEGEND
 CH PARAMETER
 65 V-BETA

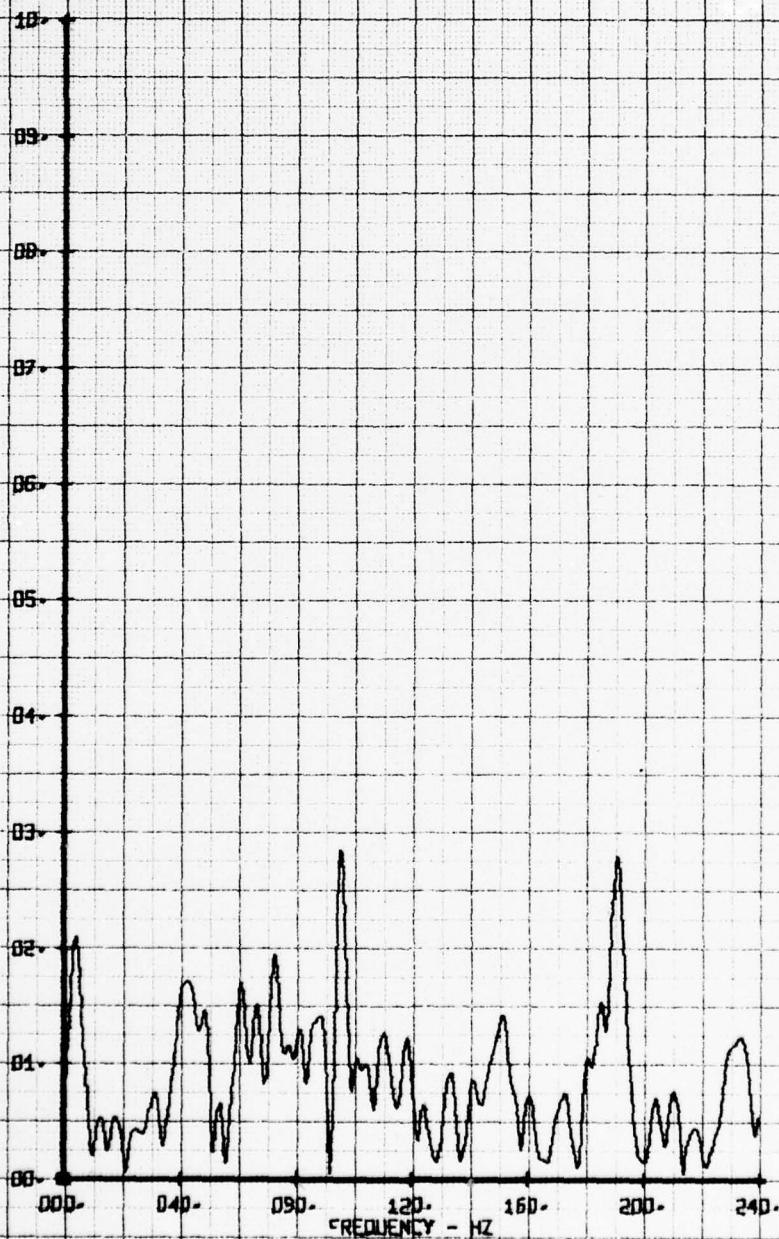
VOL. VELOCITY COMPONENT / BEAT F-S



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW, STEADY STATE OPS
RUN 203 TP 2

LEGEND
CH PARAMETER
BS Y-BETA

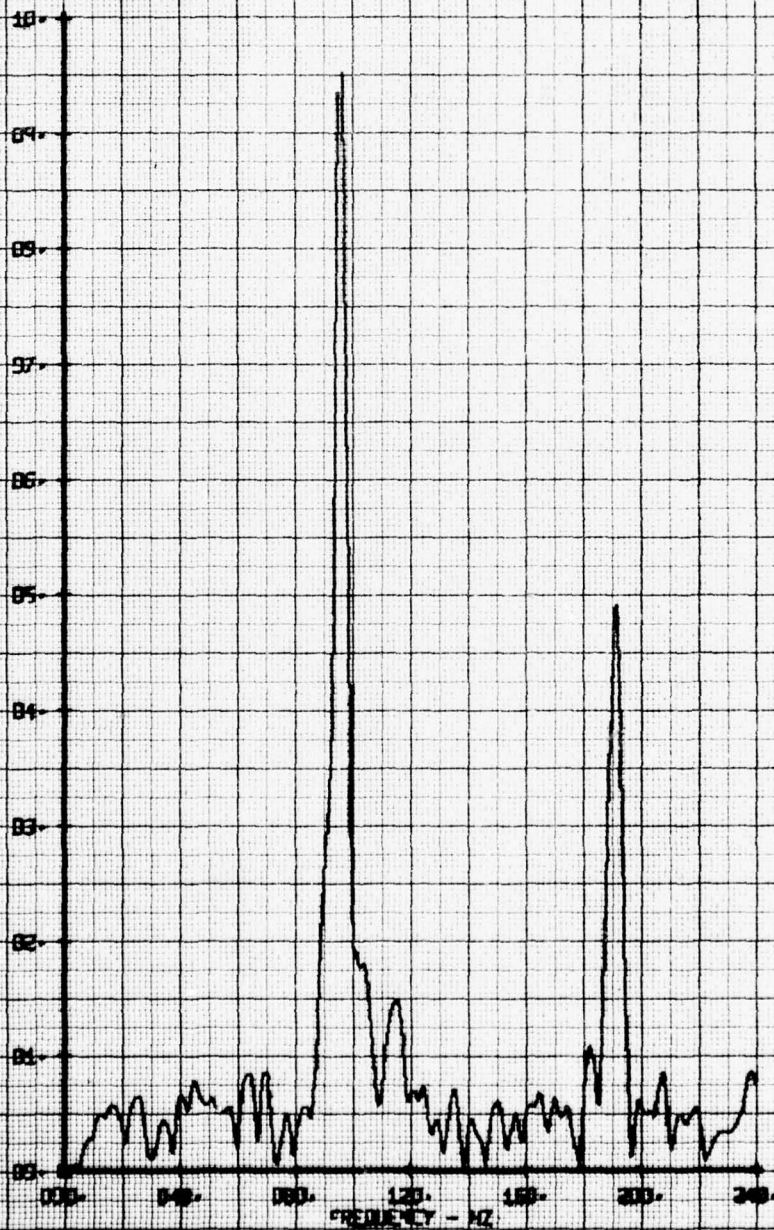
X-2 VELOCITY COMPONENT Y-BETA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
 AIR FCT. REFINISHED DUCT DPSI
 RUN 203 TP 0

LEGEND
 CH PARAMETER
 05 V-BETA

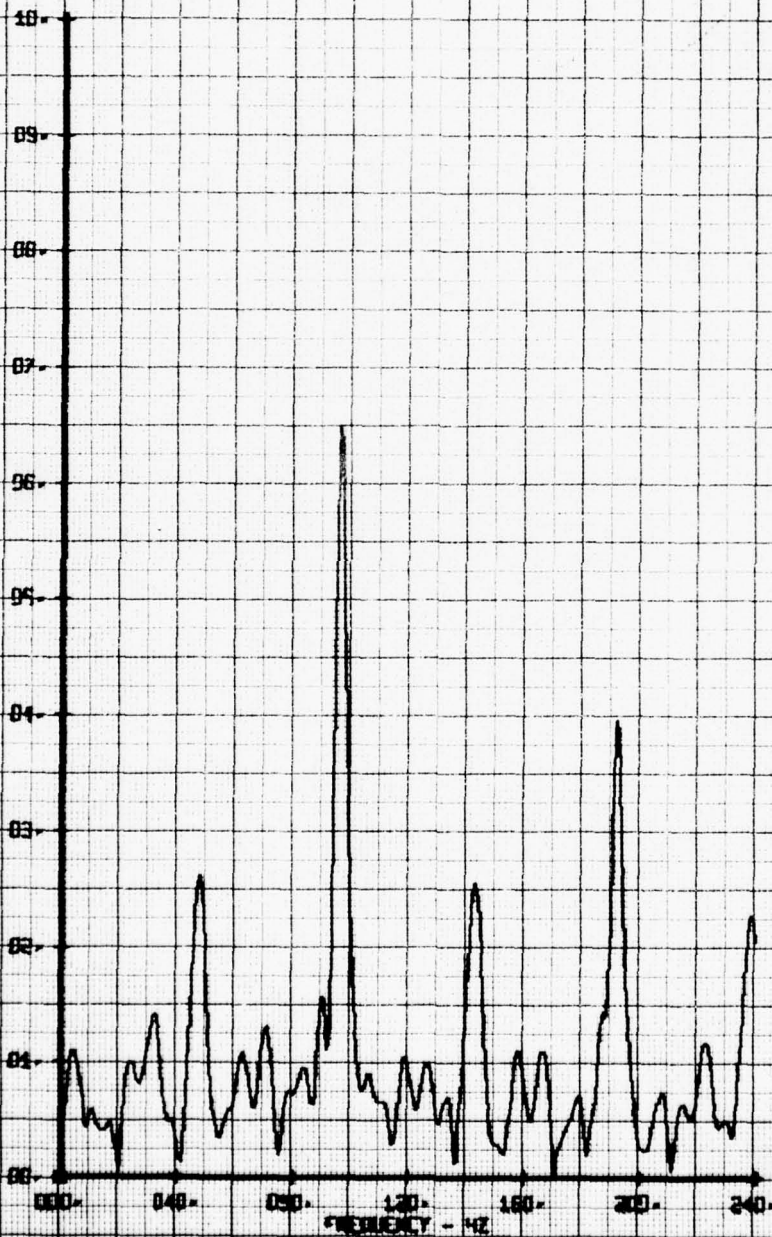
X-Y VELOCITY COMPONENT Y-BETA FHS



NOT FILM WAKE FREQUENCY ANALYSIS
 AIR EJECT. BIFURCATED DUCT DPST
 RUN 203 TP 10

LEGEND
 CH PARAMETER
 65 V-BETA

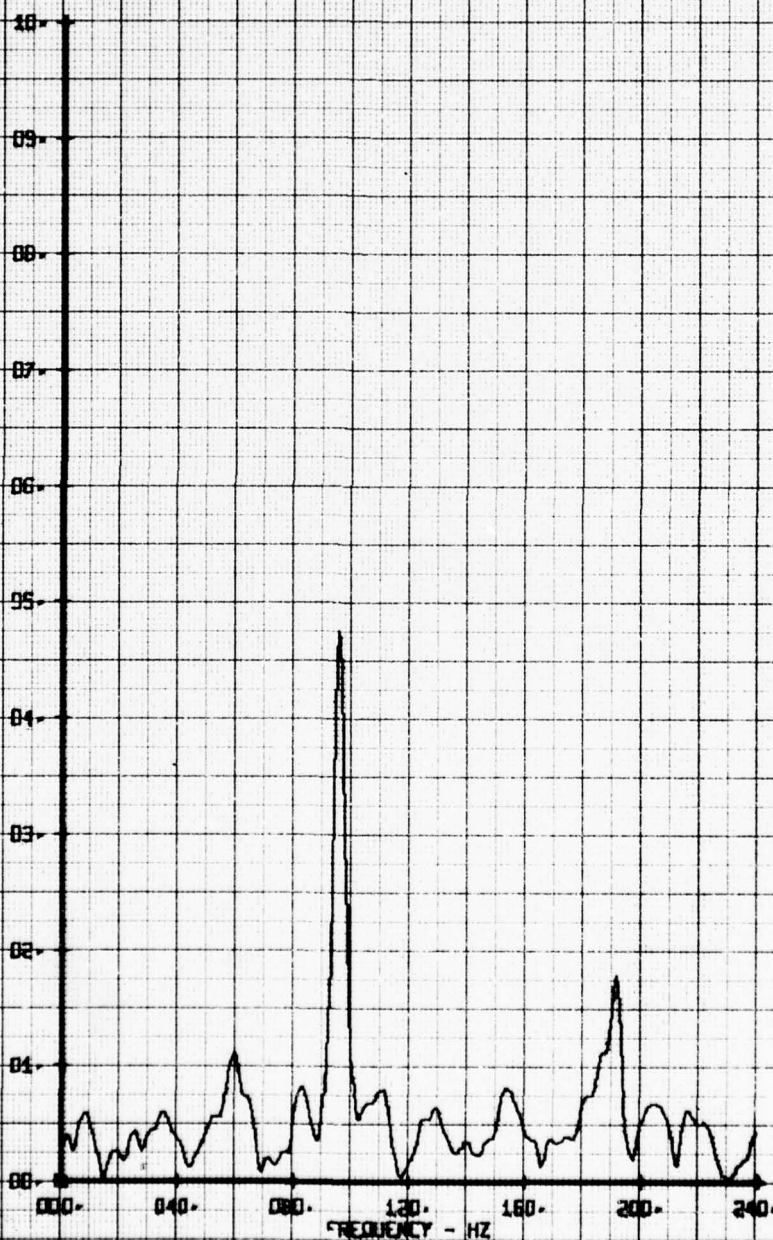
X-2 VELOCITY COMPONENT V-BETA FHS



NOT FILM WARE FREQUENCY ANALYSIS
AIR FLOW, BIFURCATED DUCT DPST
RUN 203 TP 11

LEGEND
CH PARAMETER
65 V-BETA

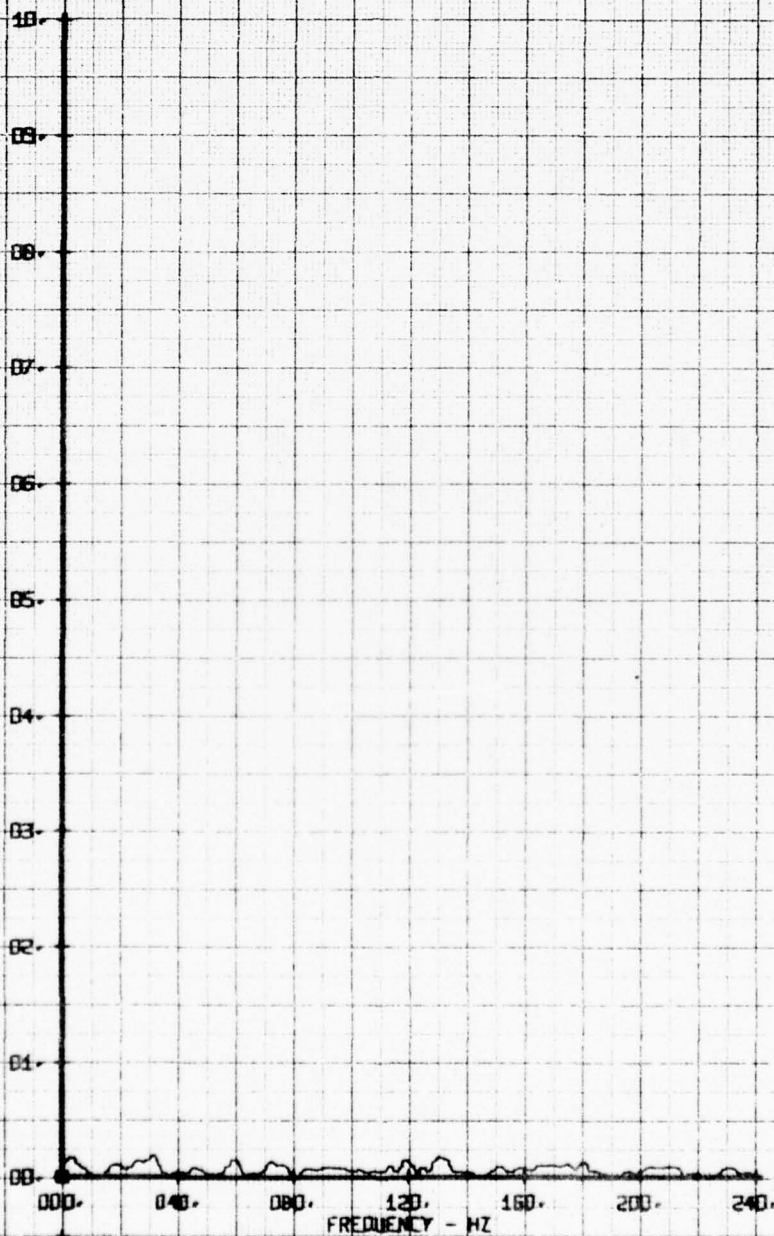
X-2 VELOCITY COMPONENT V-BETA FHS



NOY FILM WAKE FREQUENCY ANALYSIS
AIR F.C.T. BIFURCATED DUCT 40PSI
RUN 204 TP 2

LEGEND
CH PARAMETER
05 ALPHA

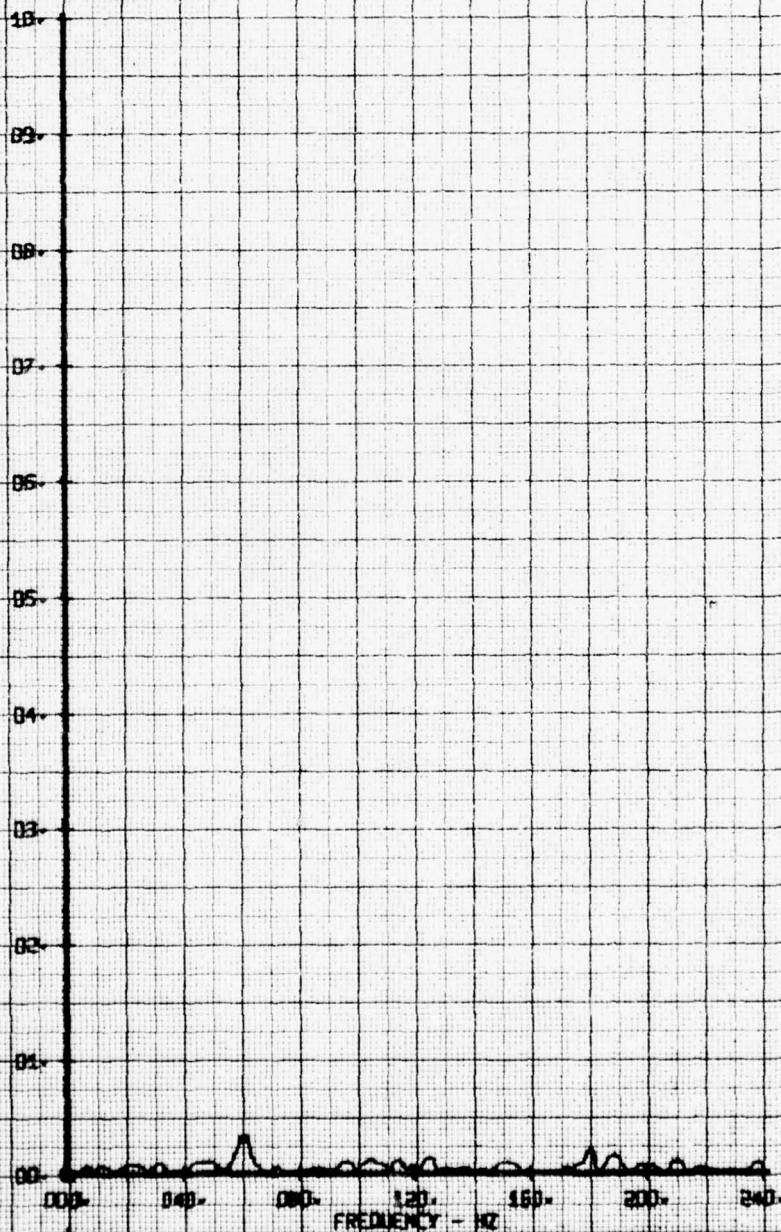
VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT 40PSI
RUN 204 TP 3

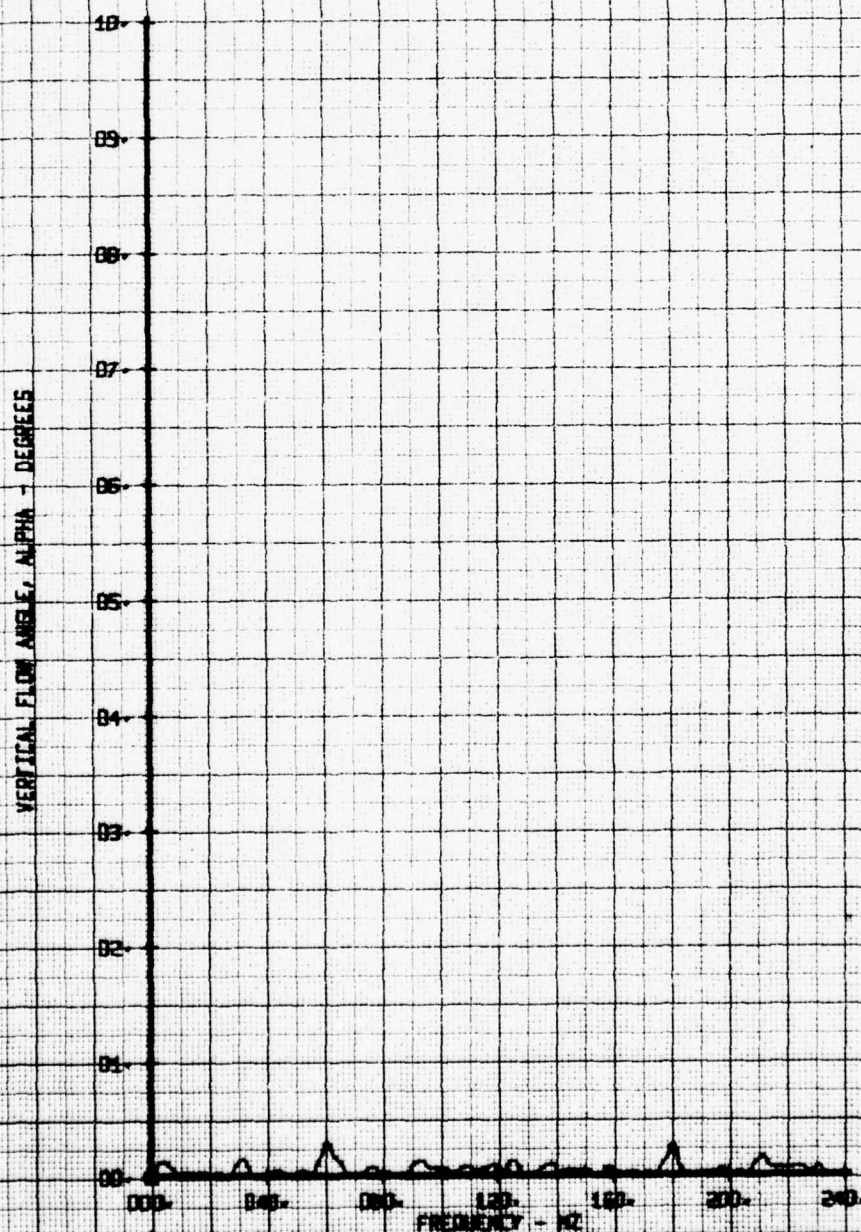
LEGEND
CH 66
PARAMETER
ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AER E.C.T. BIFURCATED DUCT 40PSI
RUN 204 TP 4

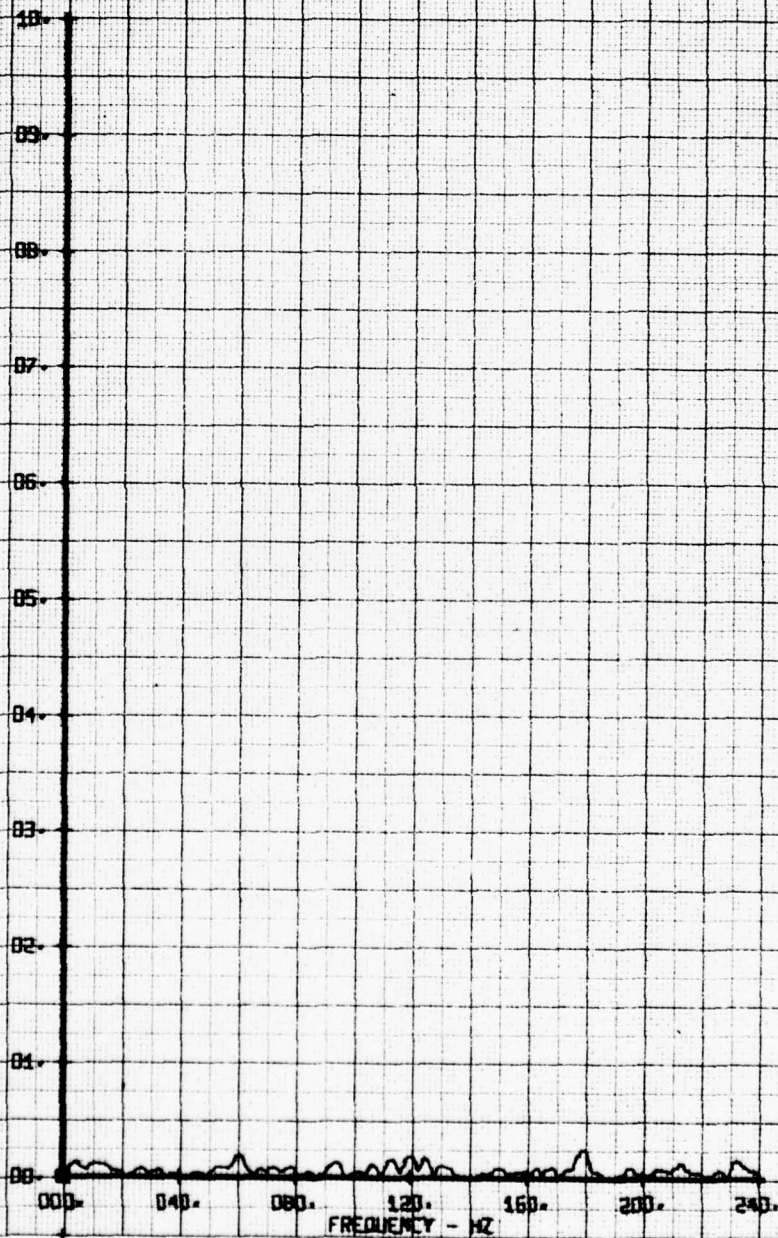
LEGEND
CH PARAMETER
66 ALPHA



NOI FILM WARE FREQUENCY ANALYSIS
ACH F.C.T. REFINATED OBT 40PST
RUN 204 TP 5

LEGEND
CH PARAMETER
55 ALPHA

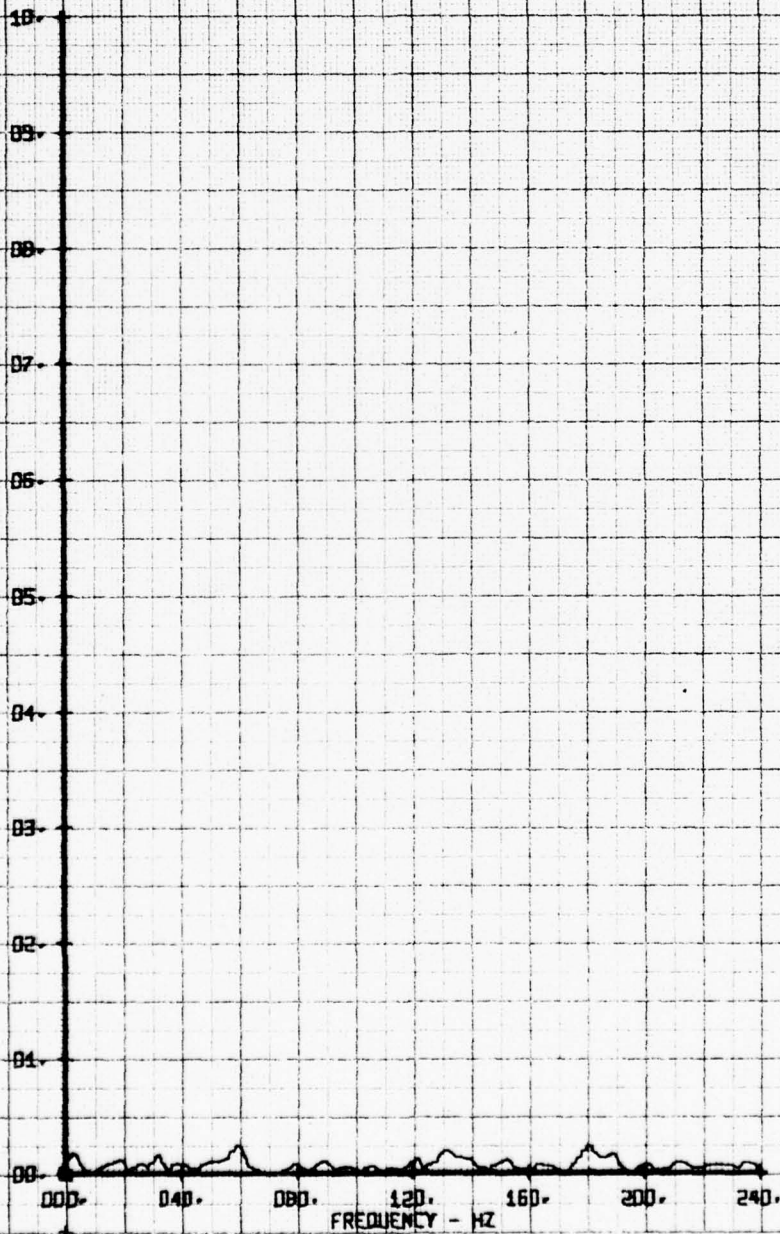
VERTICAL FLOW ANGLE, ALPHA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. REFINISHED DUCT 40PSI
RUN 204 TP 6

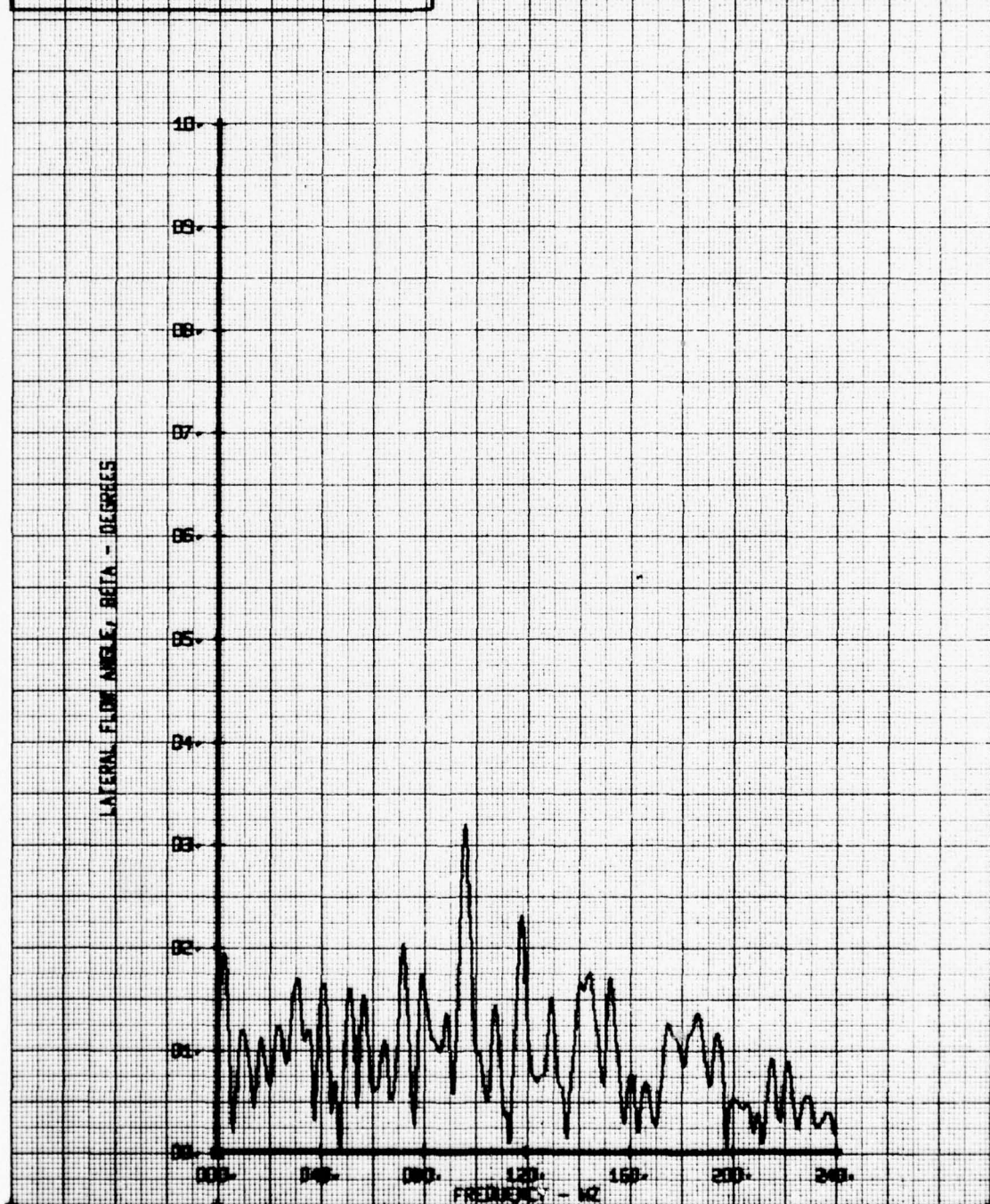
LEGEND
CH PARAMETER
56 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



NOI FILM WAKE FREQUENCY ANALYSIS
AER ECT. BIFURCATED DUCT 40P51
RUN 204 TP 2

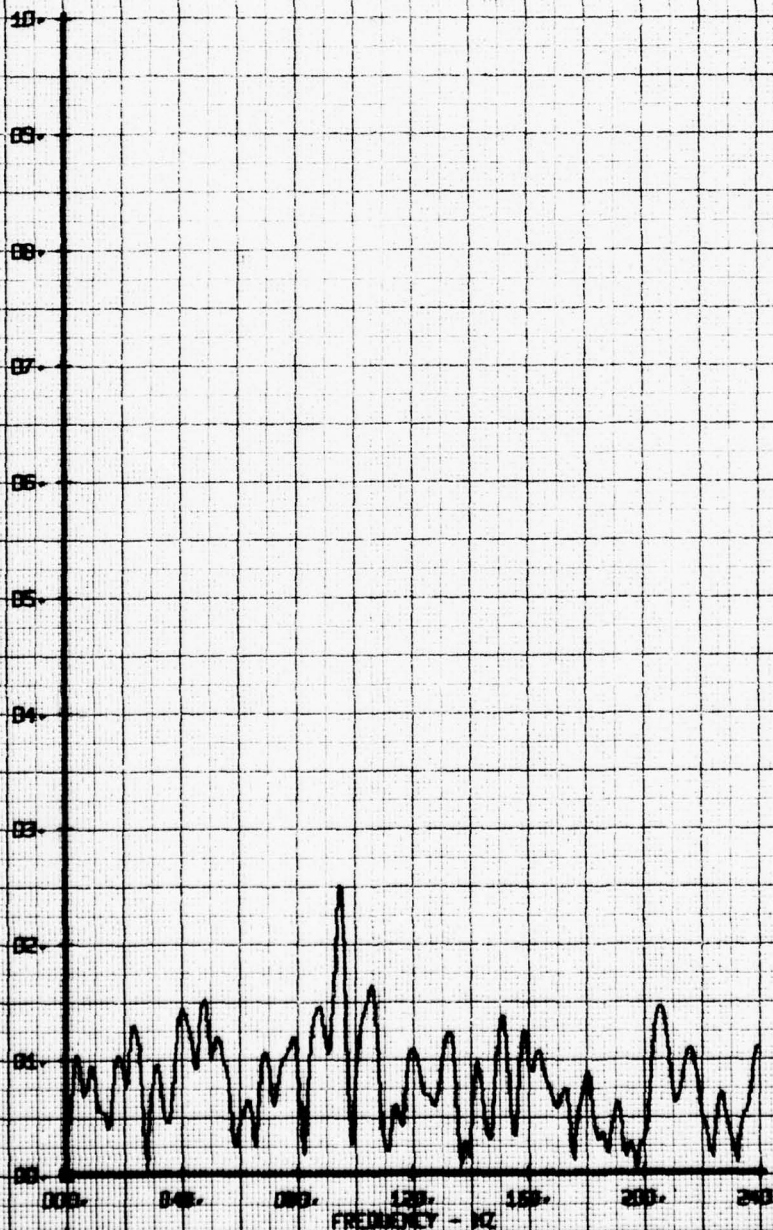
LEGEND
CH PARAMETER
65 BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW: BIFURCATED DUCT 40PSI
RUN 204 TP 3

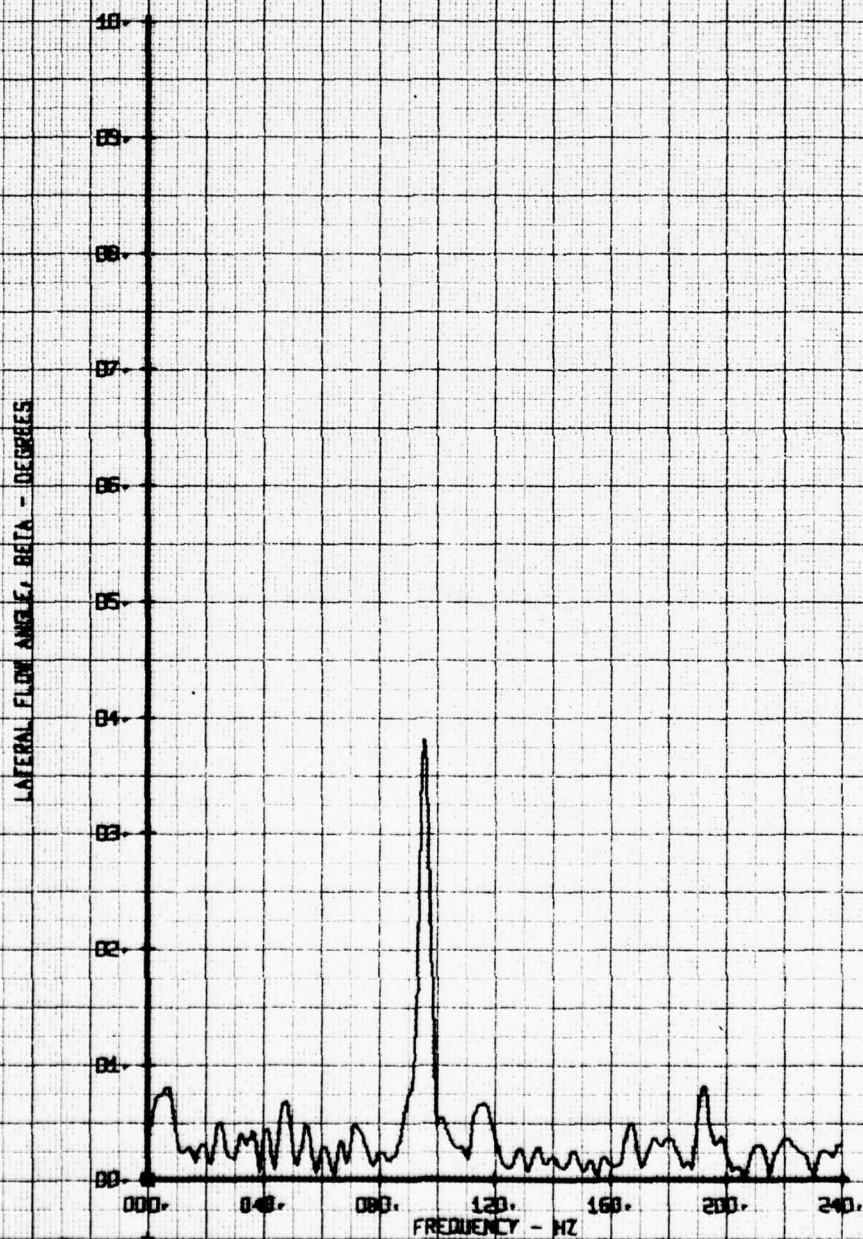
LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



NOY FILM WAKE FREQUENCY ANALYSIS
AIR C.Y.T. REFINERATED DUCT 40PST
RIN 204 TP 4

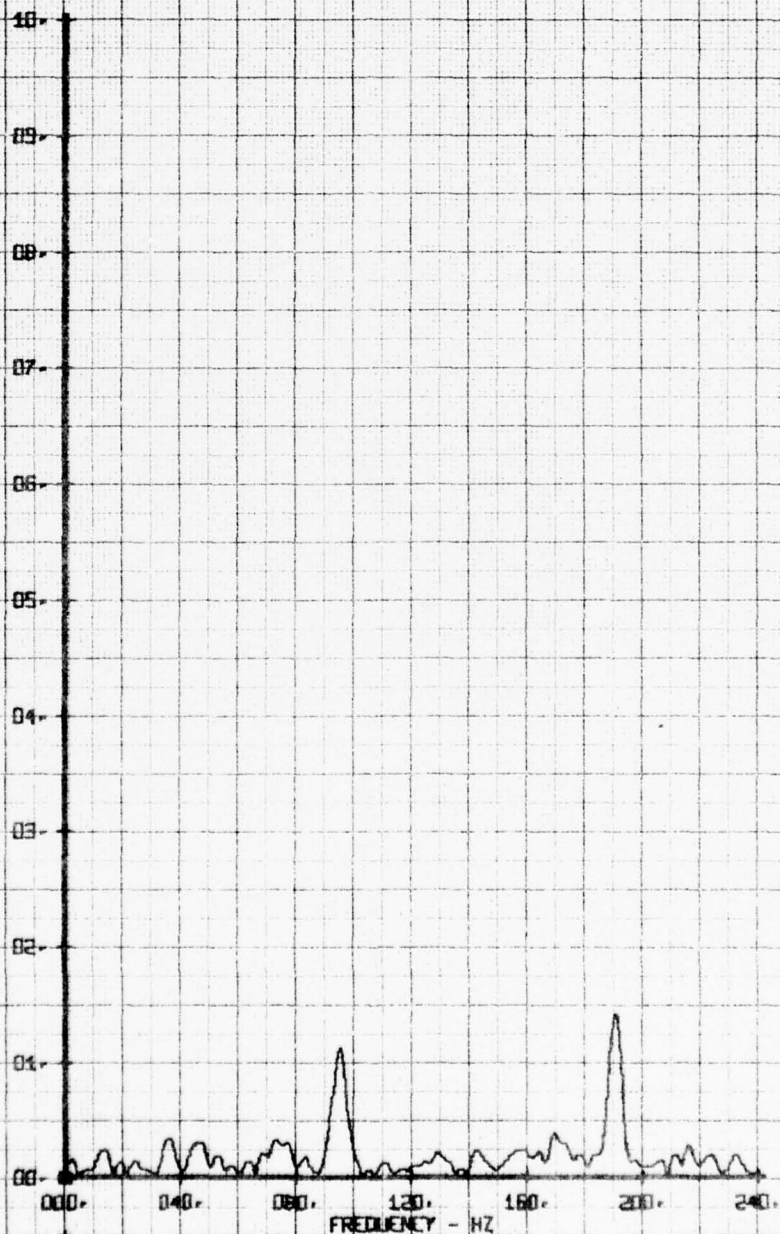
LEGEND
CH PARAMETER
65 BETA



NOT FILM WAVE FREQUENCY ANALYSIS
AIR FLOW, BIFURCATED DUCT 40PST
RUN 204 TP 5

LEGEND
CH PARAMETER
65 BETA

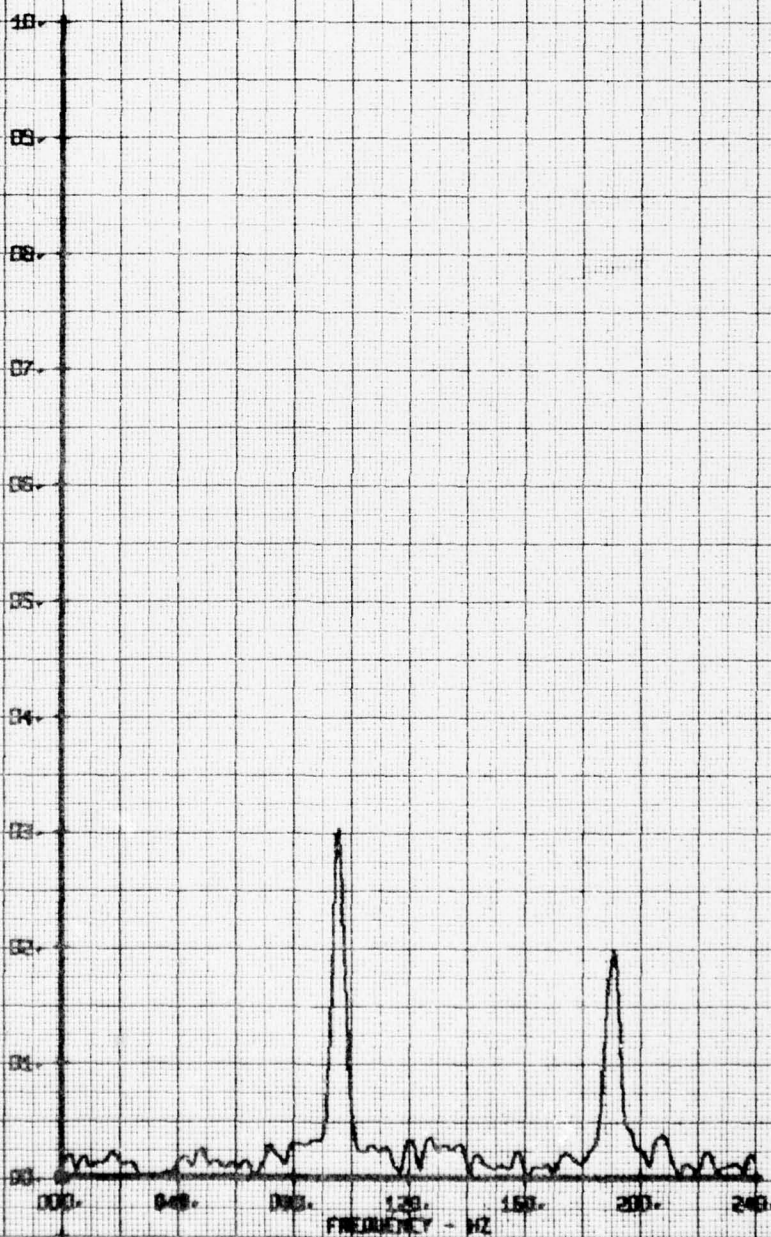
LATERAL FLOW ANGLE, BETA - DEGREES



NOT FILM WAKE FREQUENCY ANALYSIS
AIR F.I.T. BIFURCATED DUCT 40PSI
RUN 204 TP 6

LEGEND
CH PARAMETER
65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSIS
ATR EJECT. BIFURCATED DUCT 40PSI
RUN 204 TP 2

LEGEND
CH PARAMETER
55 V-ALPHA

K-Y VELOCITY COMPONENT V-ALPHA FPS

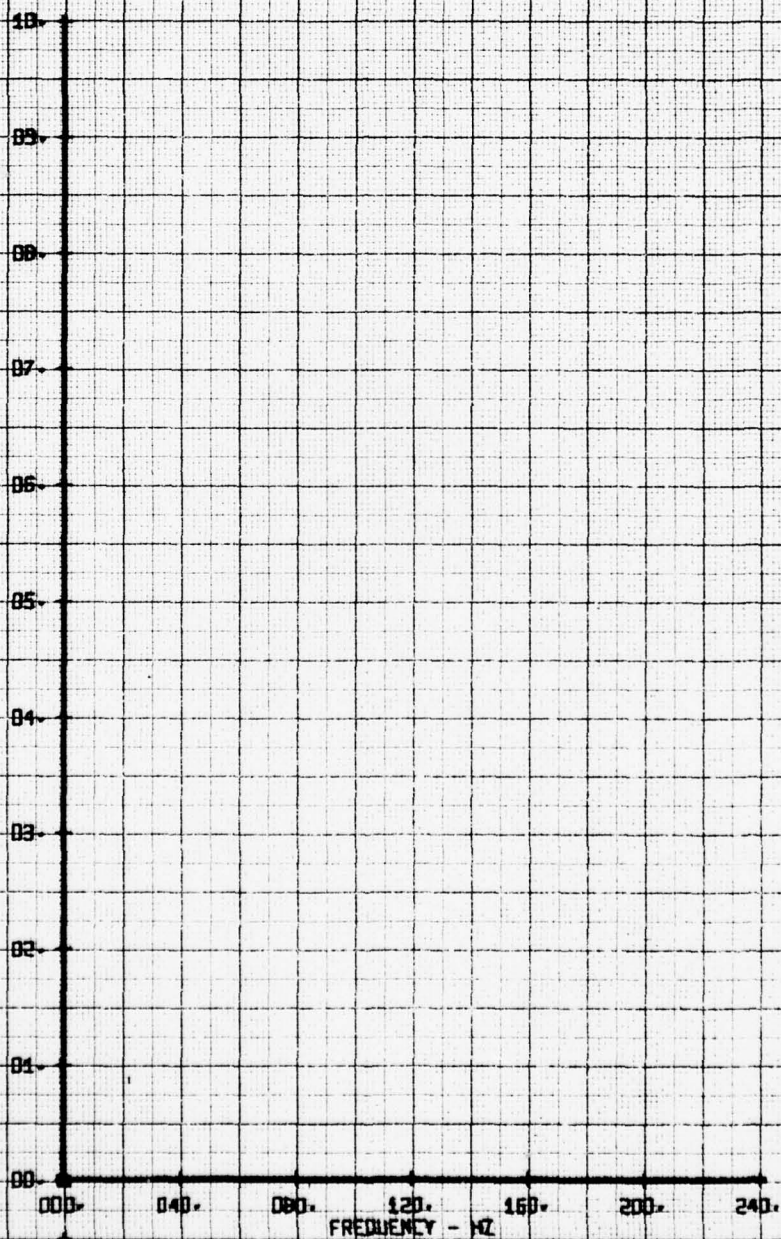
All V-ALPHA BLANK

FREQUENCY - HZ

HOT FILM WAVE FREQUENCY ANALYSIS
AER. E.C.F. - DIFFERENTIAL CRYST. 40PSI
RUN 204 TP 3

LEGEND
CH PARAMETER
55 V-ALPHA

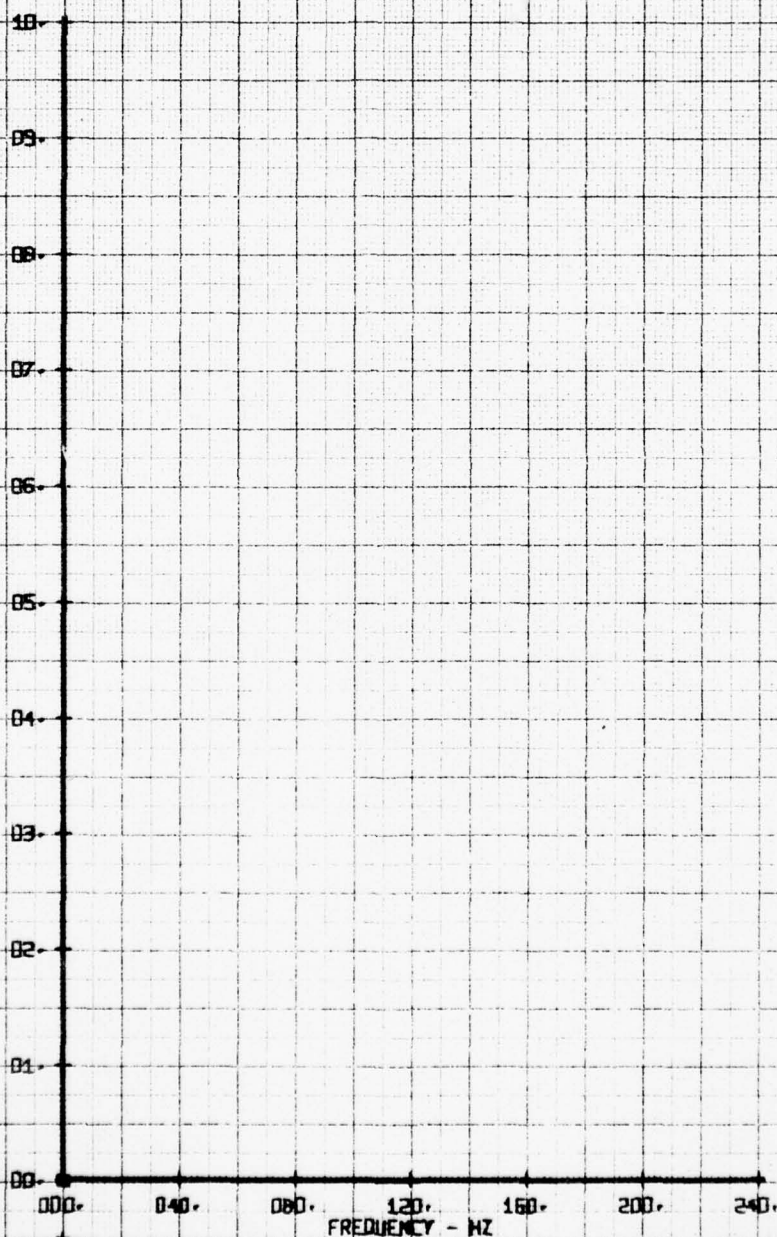
X-Y VELOCITY COMPONENT V-ALPHA FPS



HOT FILM WAKE FREQUENCY ANALYSIS
AIR F.C.T. BIFURCATED DUCT 40PSI
RUN 204 TP 4

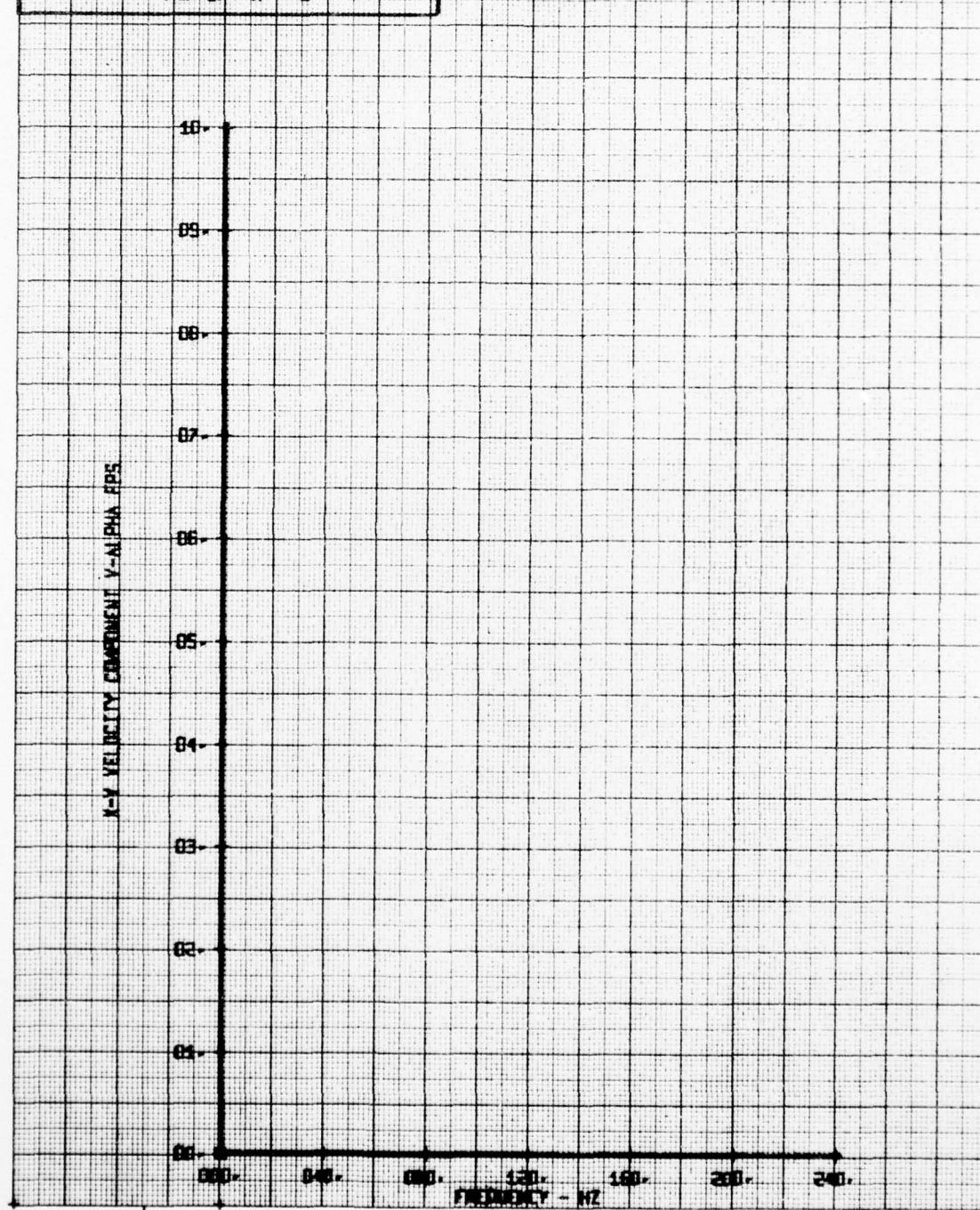
LEGEND
CH PARAMETER
66 Y-ALPHA

X-Y VELOCITY COMPONENT Y-ALPHA FPS



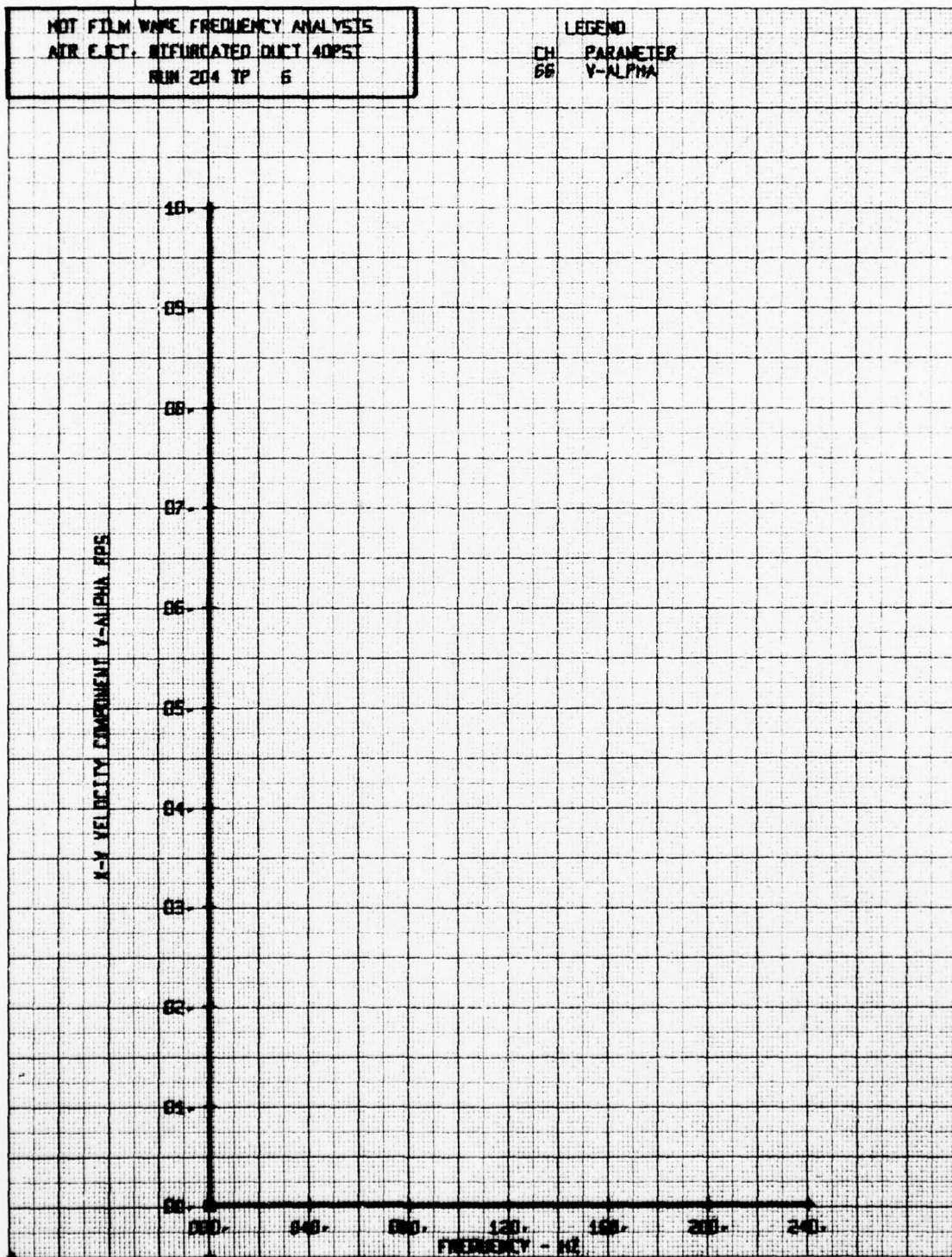
NOT FILM WAKE FREQUENCY ANALYSIS
AIR F.I.T. STURGEON DUCT 40PST
RUN 204 TP 5

LEGEND
CH PARAMETER
BB V-ALPHA



HOT FILM WIRE FREQUENCY ANALYSIS
AIR C.T. BIFURCATED DUCT 40PST
RUN 204 TP 6

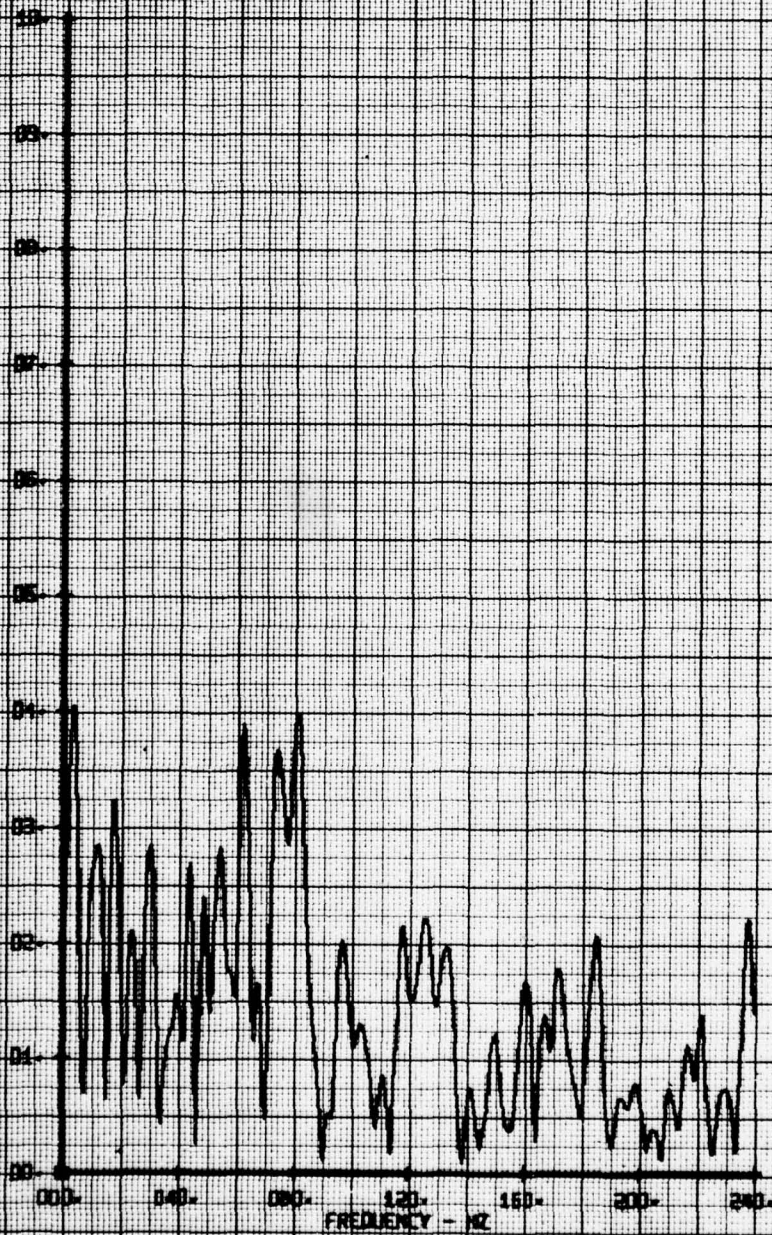
LEGEND
CH PARAMETER
66 V-ALPHA



NOT FILM WAVE FREQUENCY ANALYSIS
 AIR F.C.T. INTERSTATE DIST. AGENT
 RM 204 TP 2

1.5500
 EN PARAMETER
 RS Y-BETA

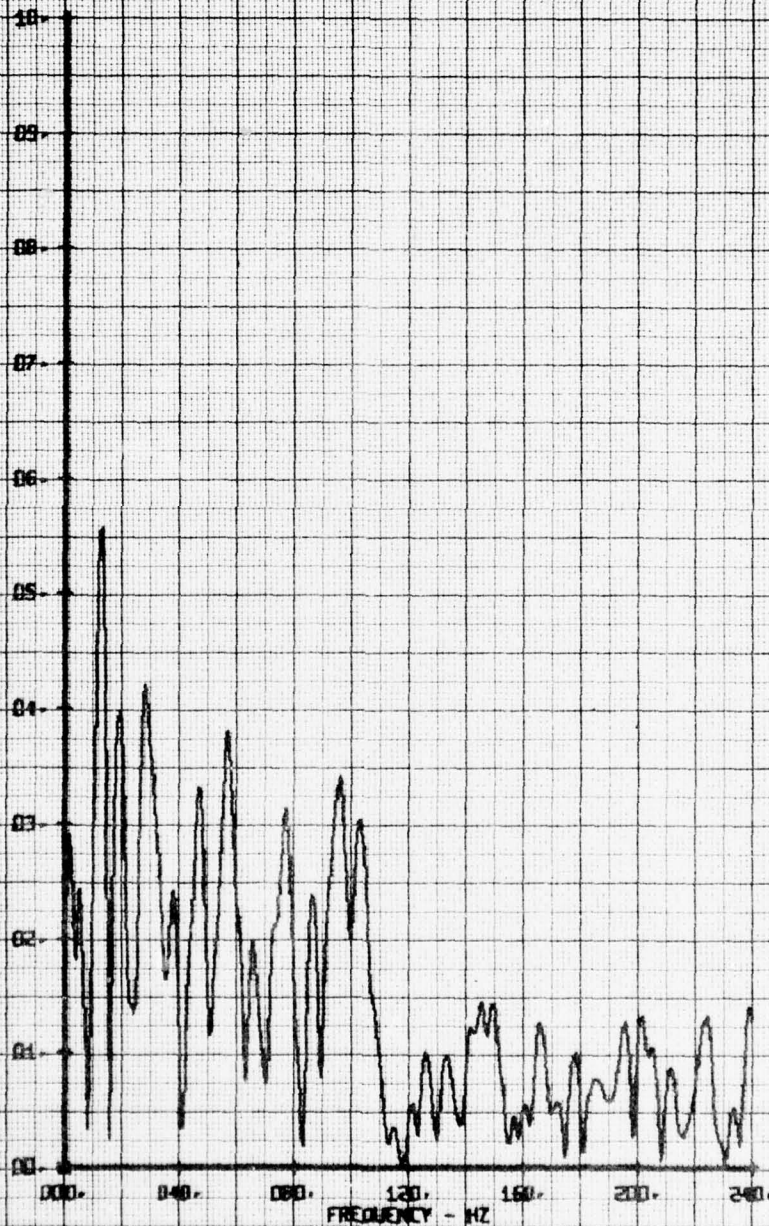
K-2 VELOCITY COMPONENT Y-BETA EPS



NOT FILM WAVE FREQUENCY ANALYSIS
 AIR F.C.T. - ESTIMATED DUCT 40PSI
 RUN 204 TP 2

LEGEND
 CH 65
 PARAMETER
 V-BETA

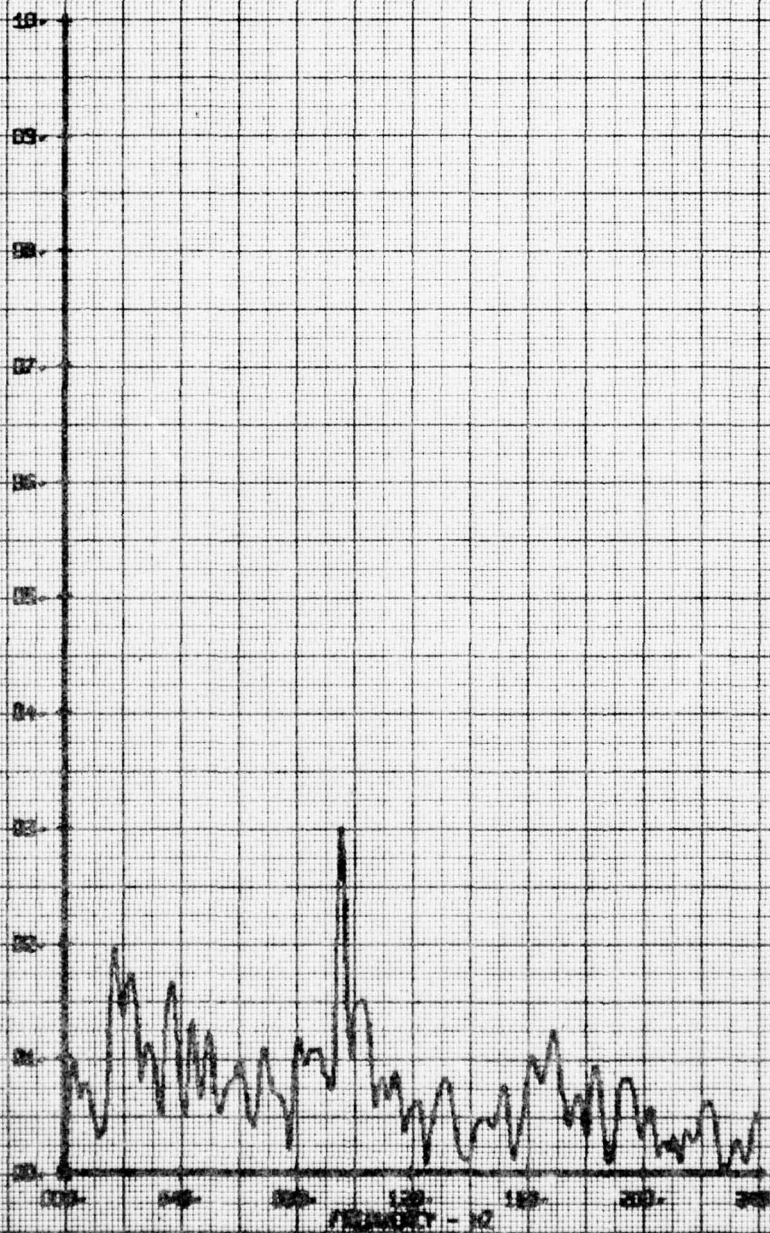
X-2 VELOCITY COMPONENT V-BETA FPS



HOT FILM WAVE FREQUENCY ANALYSIS
 AIR F.C.T. DIFFERENTIAL DUCT 40P51
 RUN 204 TP 4

LEGEND
 CH PARAMETER
 65 V-BETA

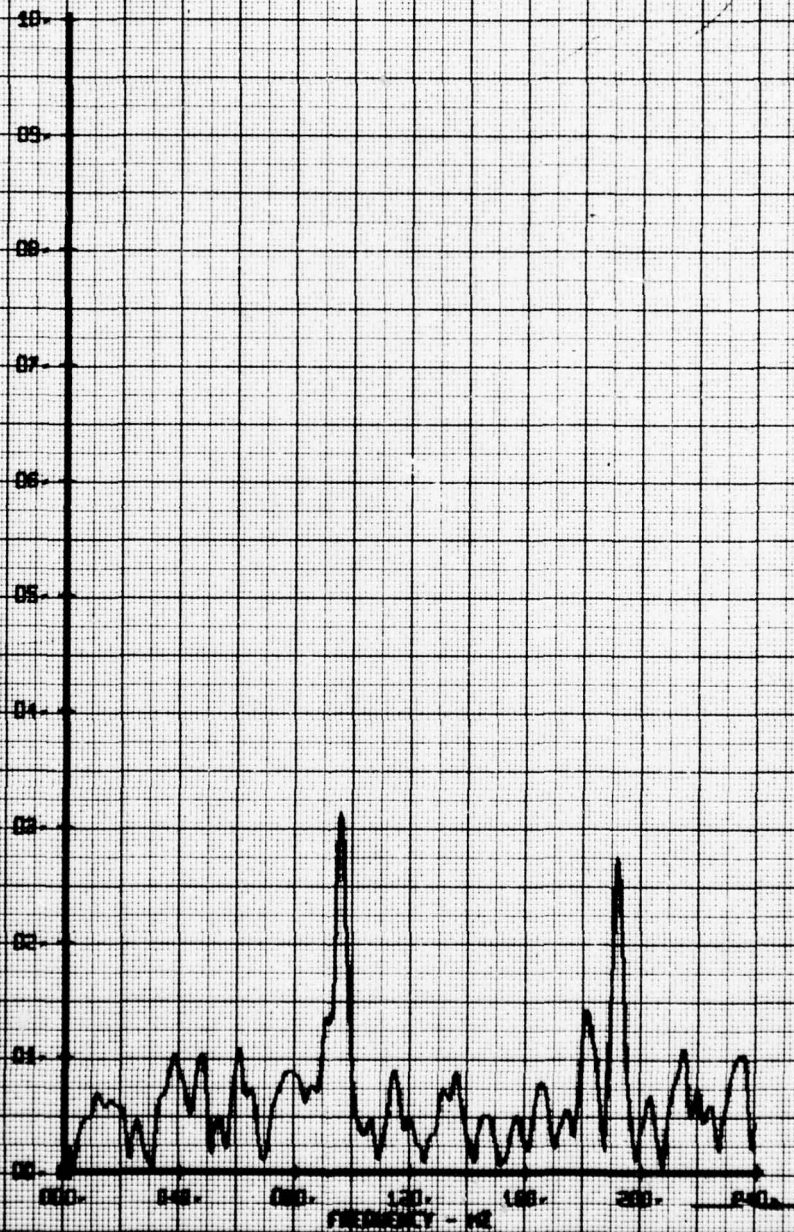
K-7 VELOCITY COMPONENT V-BETA FHS



NOT FILM WAVE FREQUENCY ANALYSIS
 ATR ECT. STEURATED ONLY 40PST
 RUN 204 TP 5

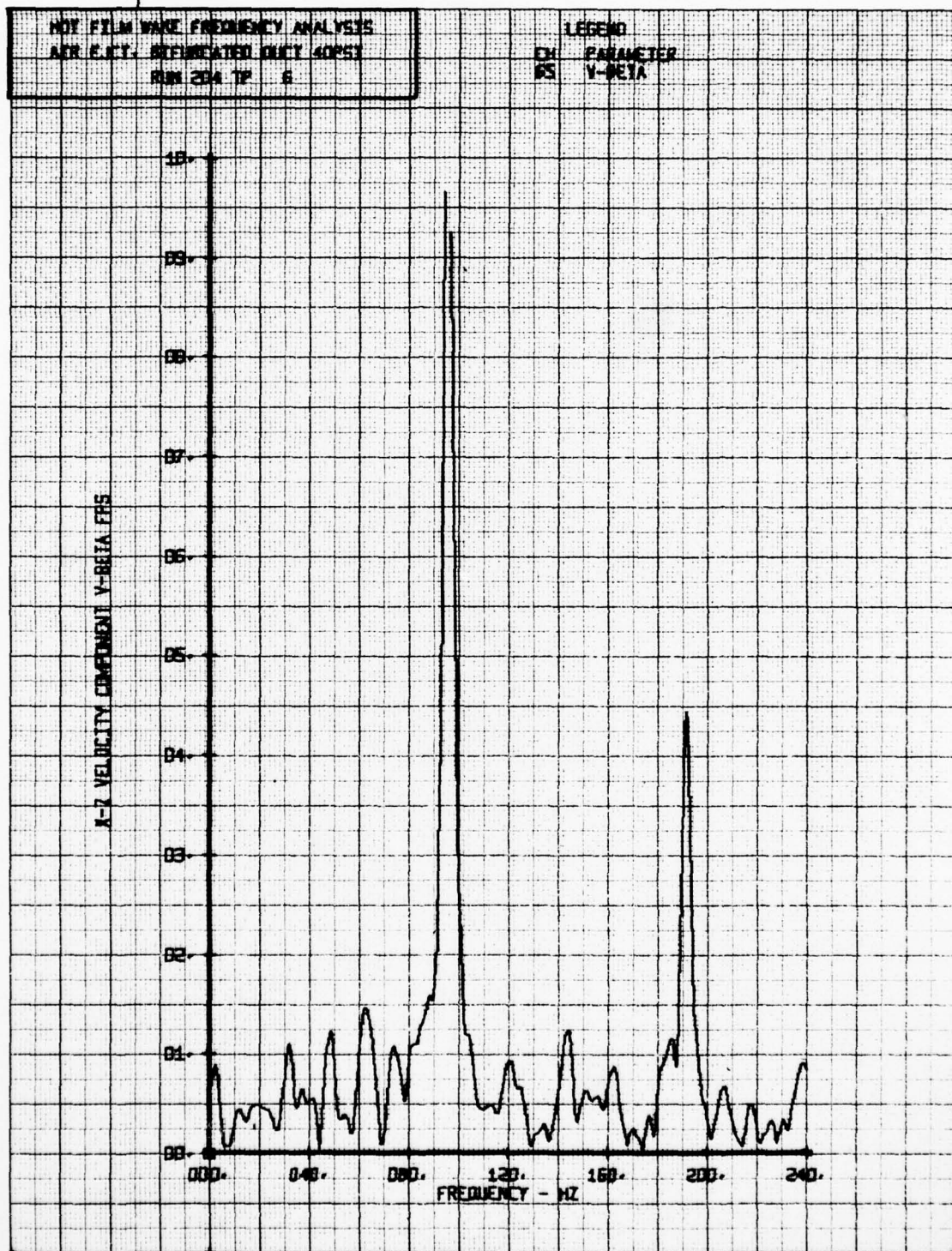
LEGEND
 CH PARAMETER
 65 V-BETA

R-2 VELOCITY COMPONENT V-BETA FHS



NOT FILM WARE FREQUENCY ANALYSIS
AIR F.C.T. REFRACTED ONLY 40P51
RUN 204 TP 6

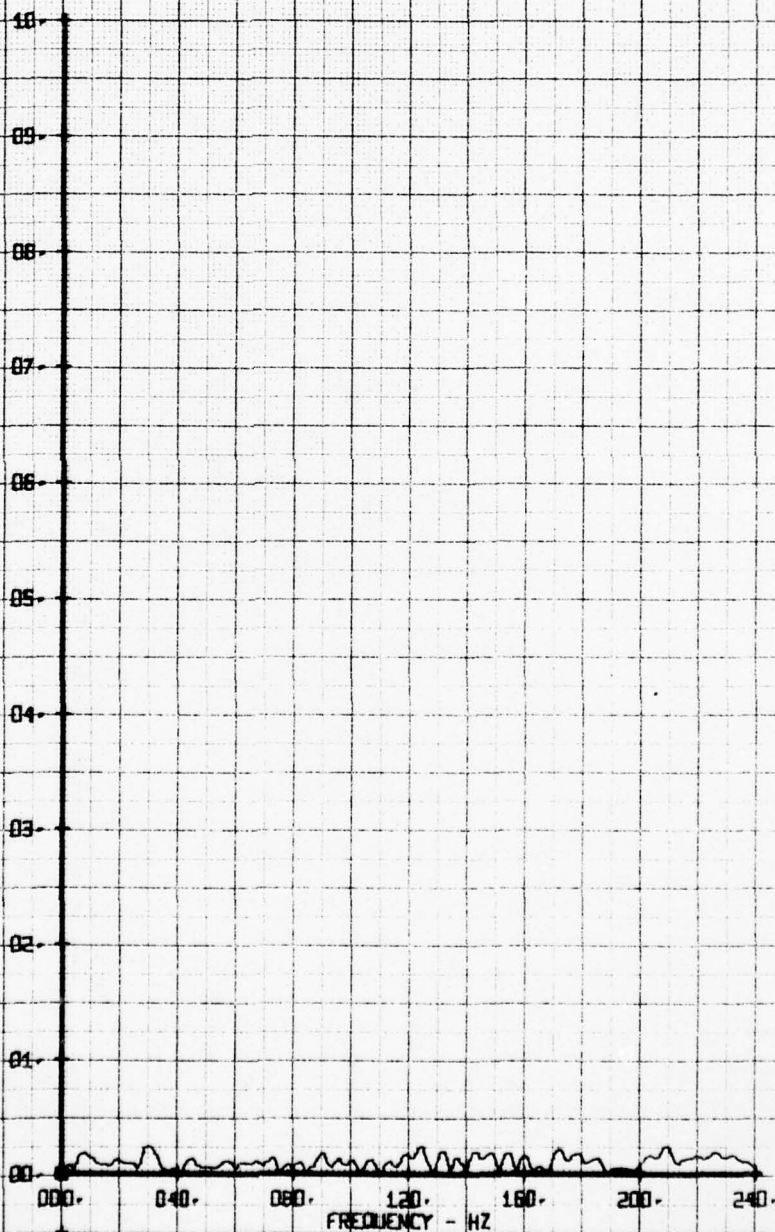
LEGEND
CH PARAMETER
RS Y-BETA



NOT FILM WAKE FREQUENCY ANALYSIS
ATR F.M.T. - BIFURCATED DUCT 150PST
RUN 205 YP 1

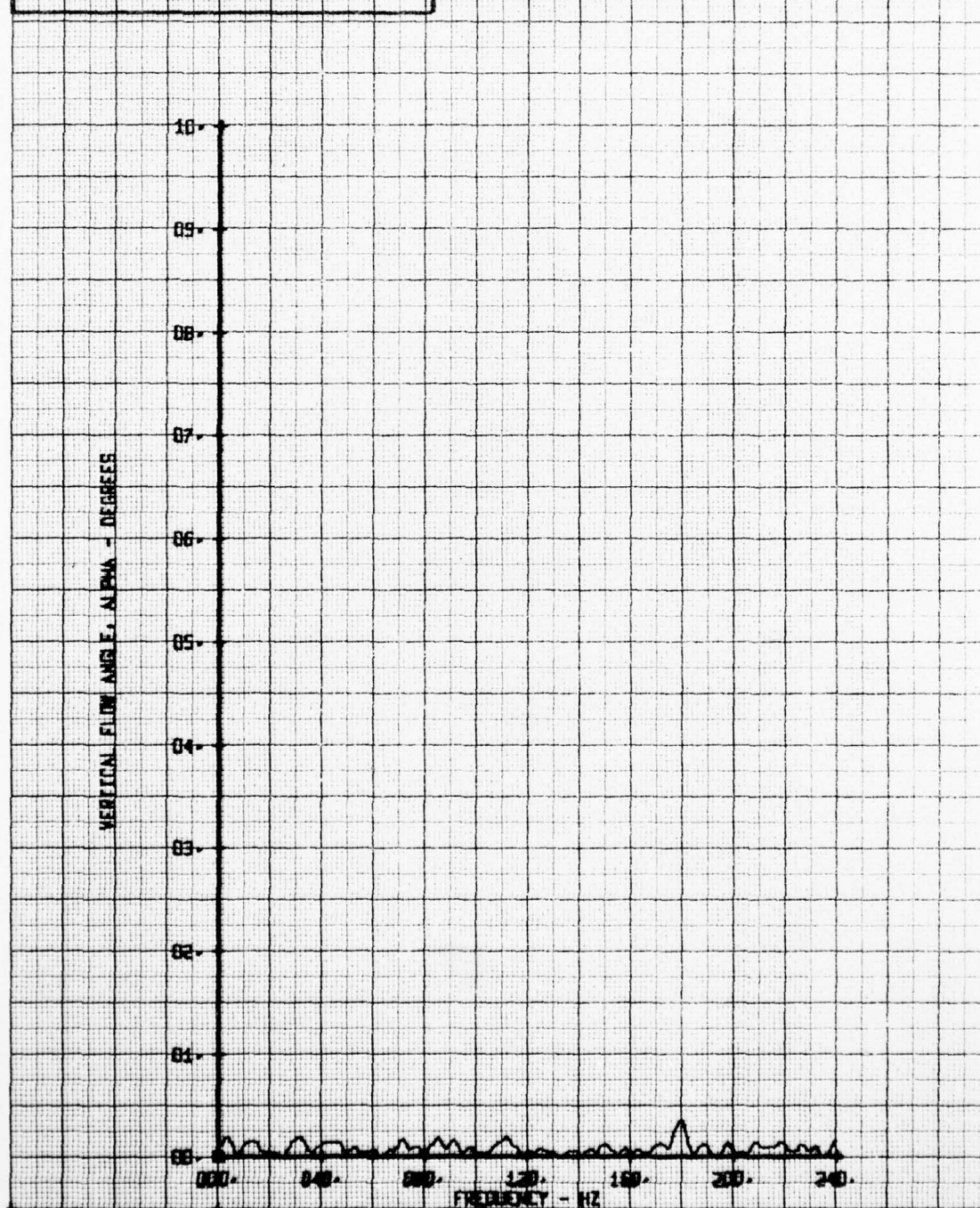
LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



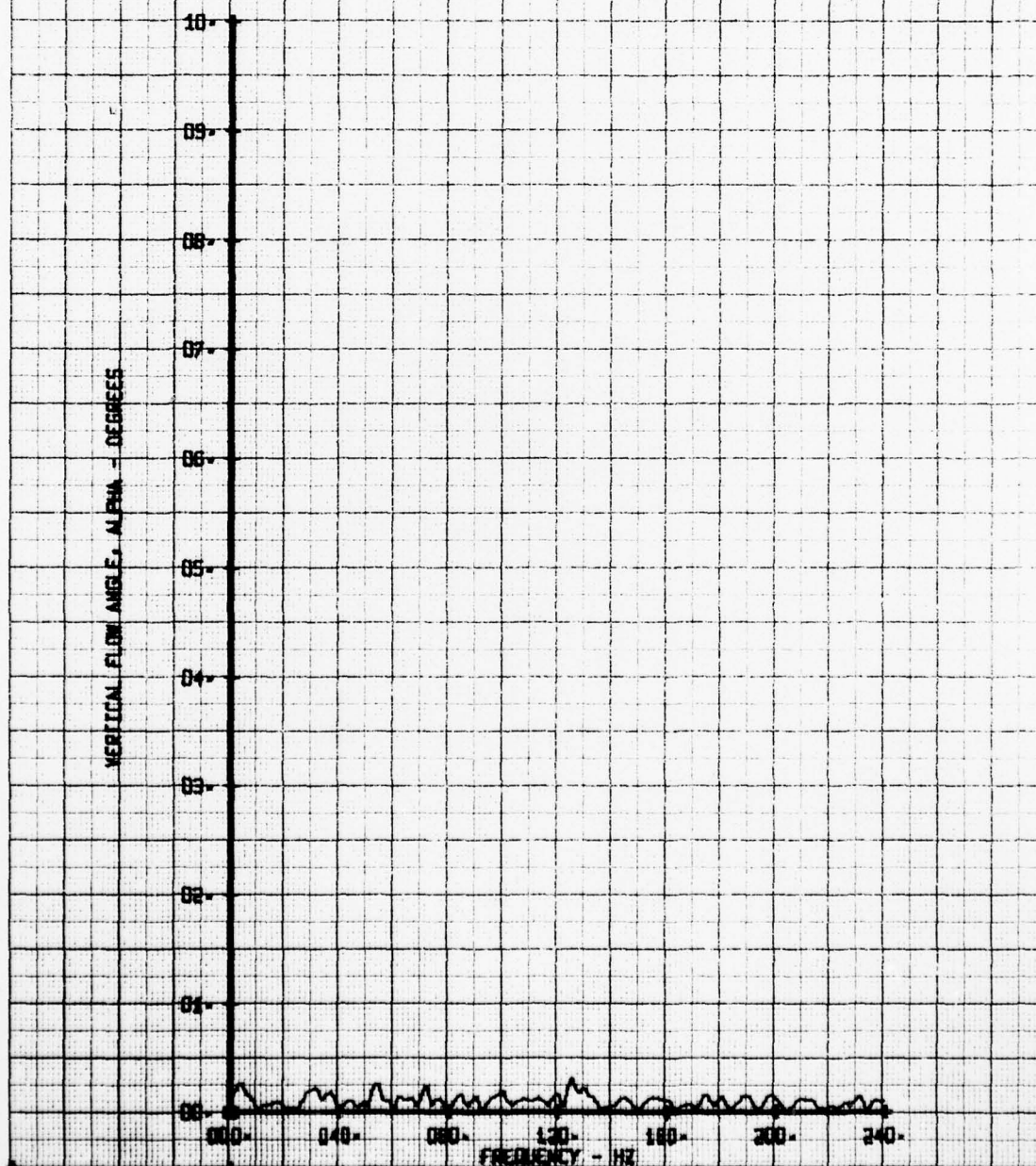
HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT 150PSI
RUN 205 TP 2

LEGEND
CH PARAMETER
66 ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT 150PSI
RUN 205 TP 3

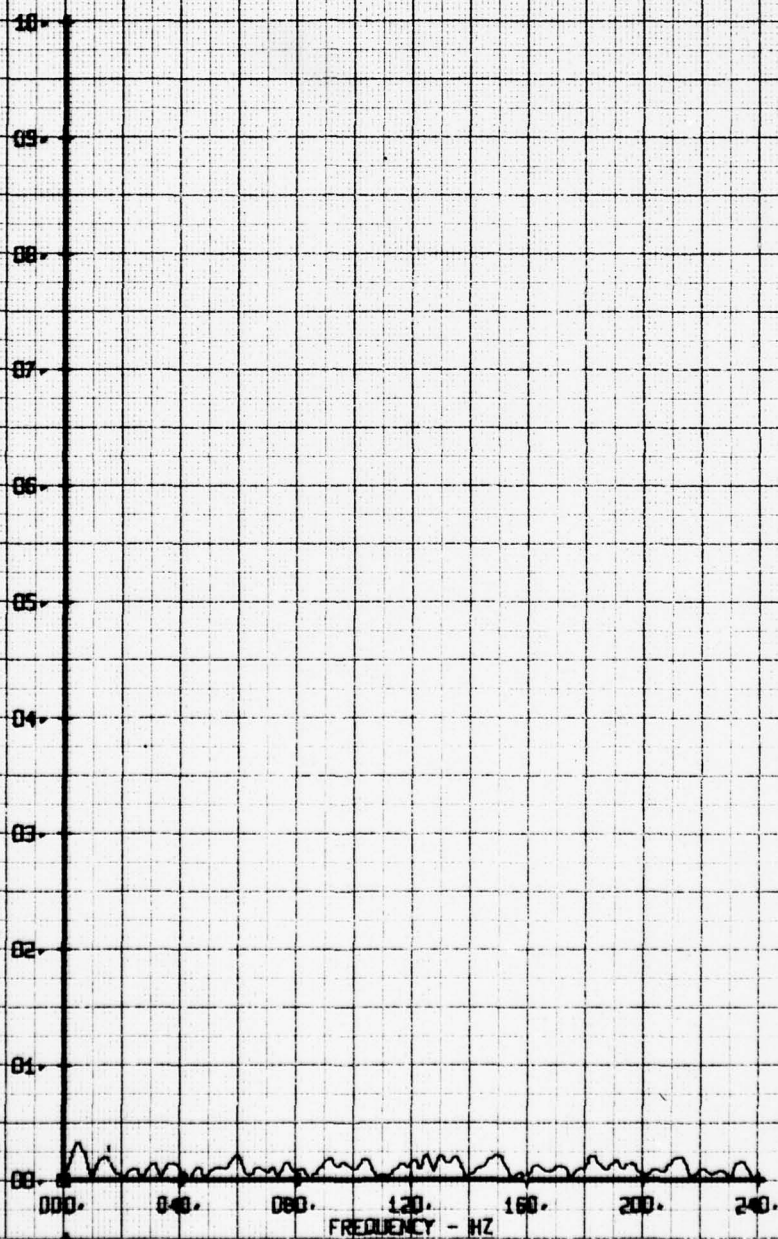
LEGEND
CH 66 PARAMETER
ALPHA



NOI FILM WAVE FREQUENCY ANALYSIS
ATR C.M.T. INTERCATED DUCT 150PST
RUN 205 TP 4

LEGEND
CH PARAMETER
66 ALPHA

VERTICAL FLOW ANGLE, ALPHA - DEGREES



AD-A062 590

BOEING VERTOL CO PHILADELPHIA PA
INTERACTIONAL AERODYNAMICS OF THE SINGLE ROTOR HELICOPTER CONFI--ETC(U)
SEP 78 P F SHERIDAN

F/G 1/3

DAAJ02-77-C-0020

USARTL-TR-78-236

NL

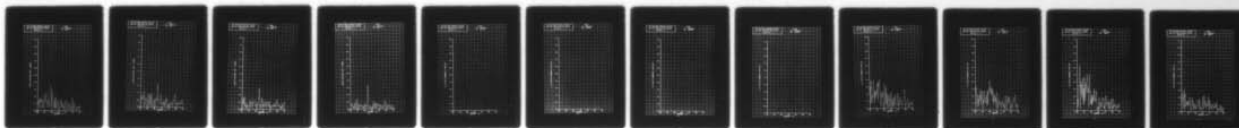
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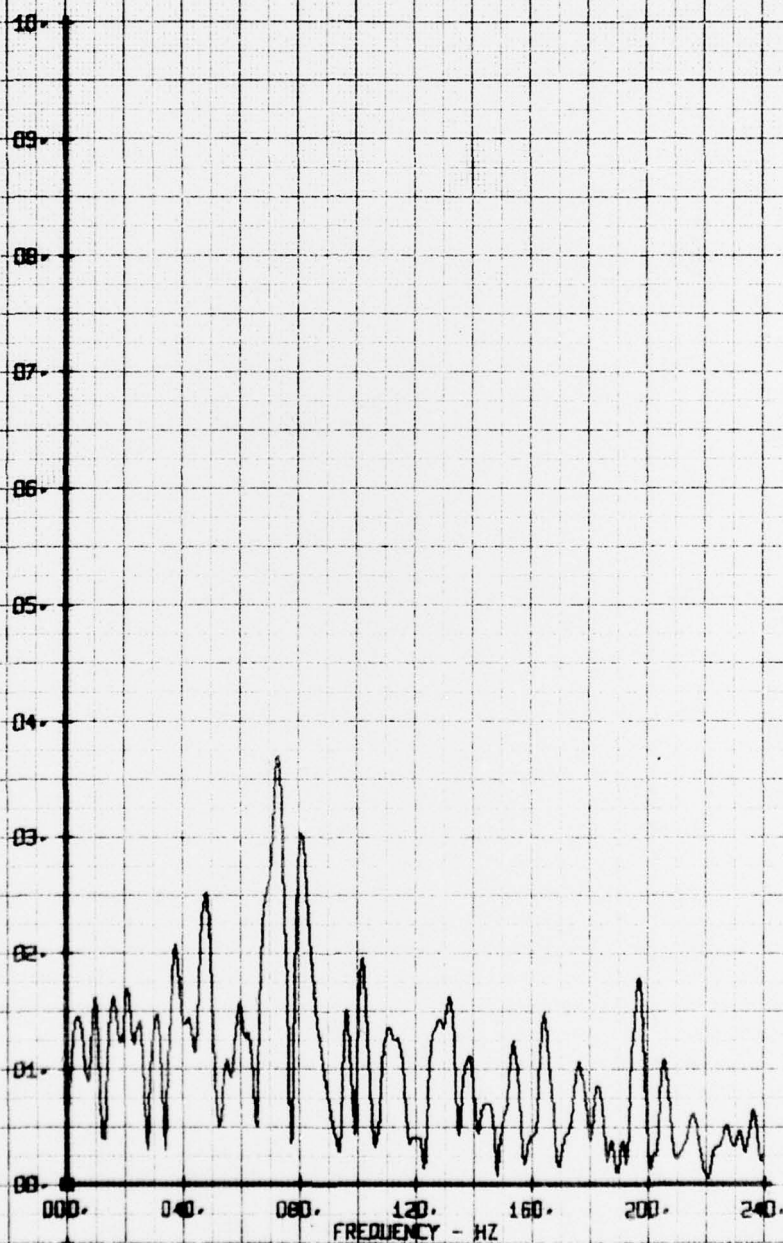
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HOT FILM WAKE FREQUENCY ANALYSIS
AIR FLOW. STIFURCATED DUCT 150P51
RUN 205 TP 1

LEGEND
CH 65
PARAMETER
BETA

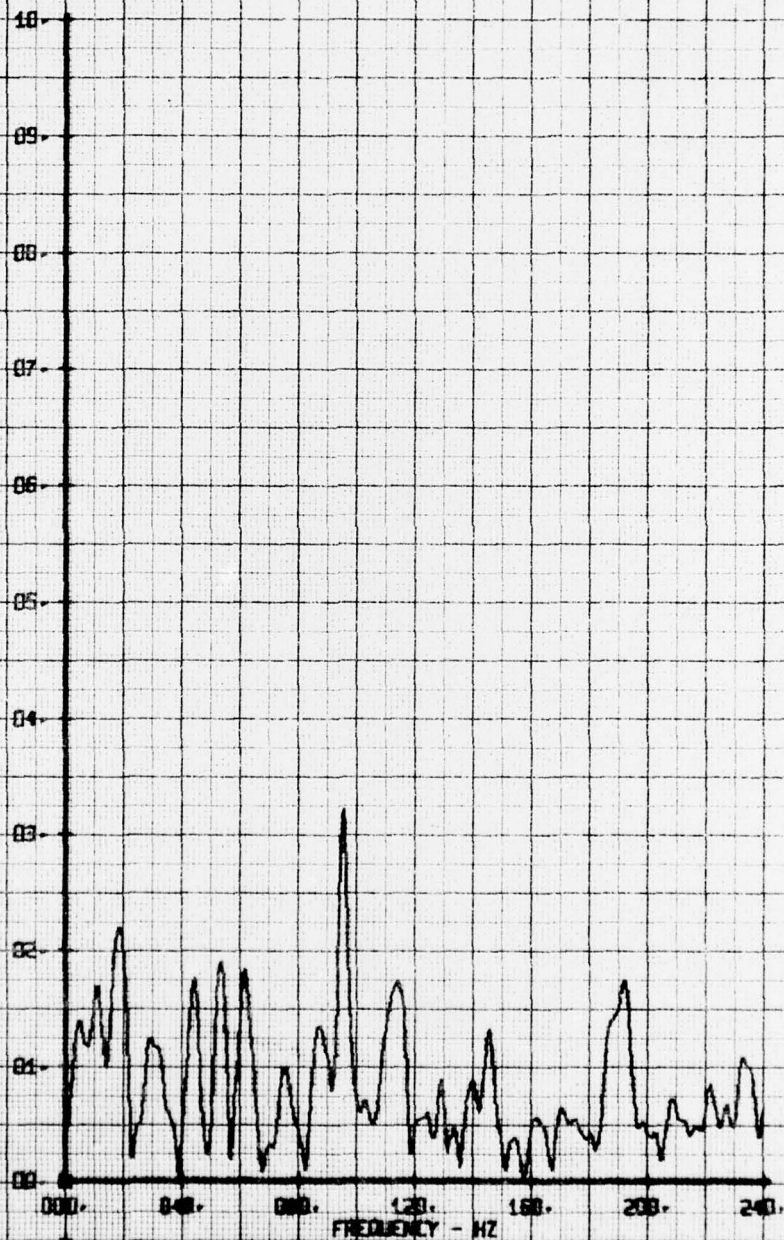
LATERAL FLOW ANGLE, BETA - DEGREES



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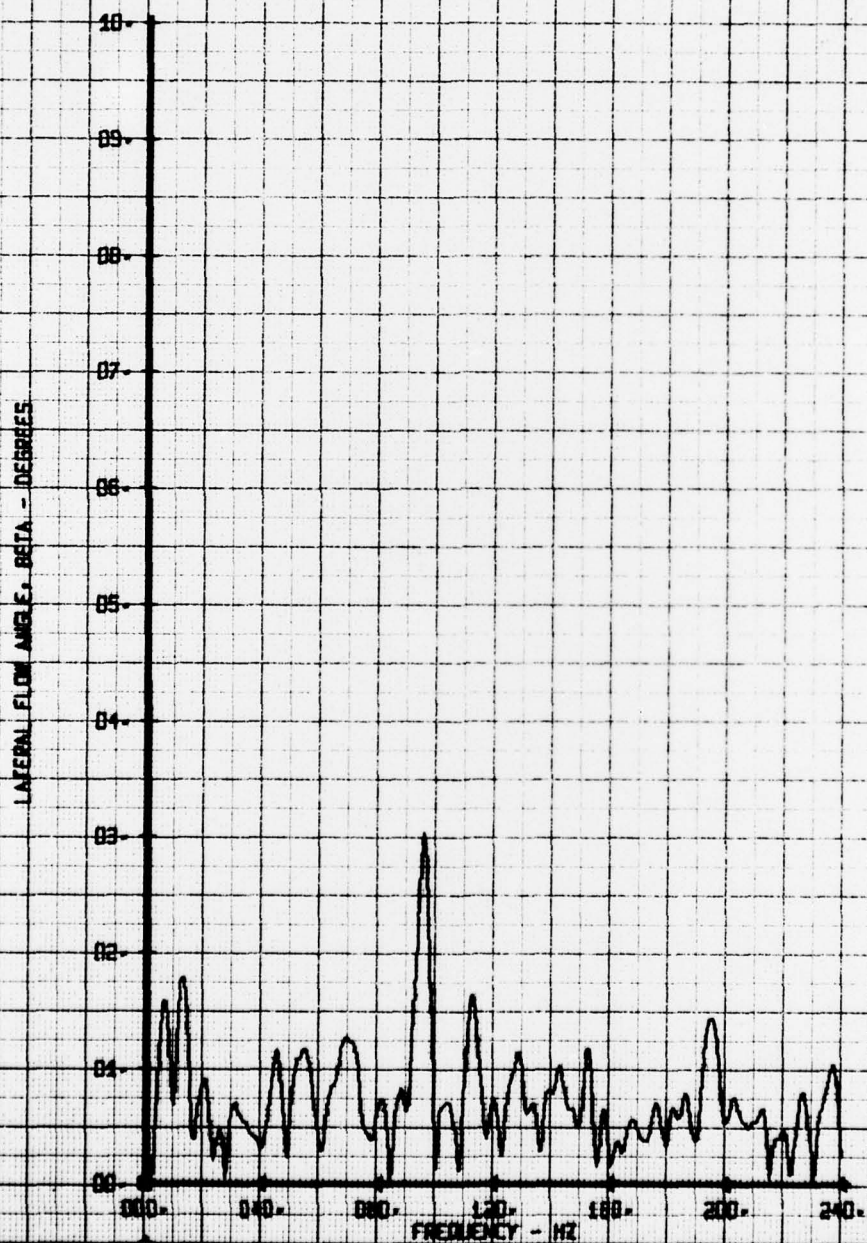
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65 BETA

LATERAL FLOW ANGLE, BETA - DEGREES



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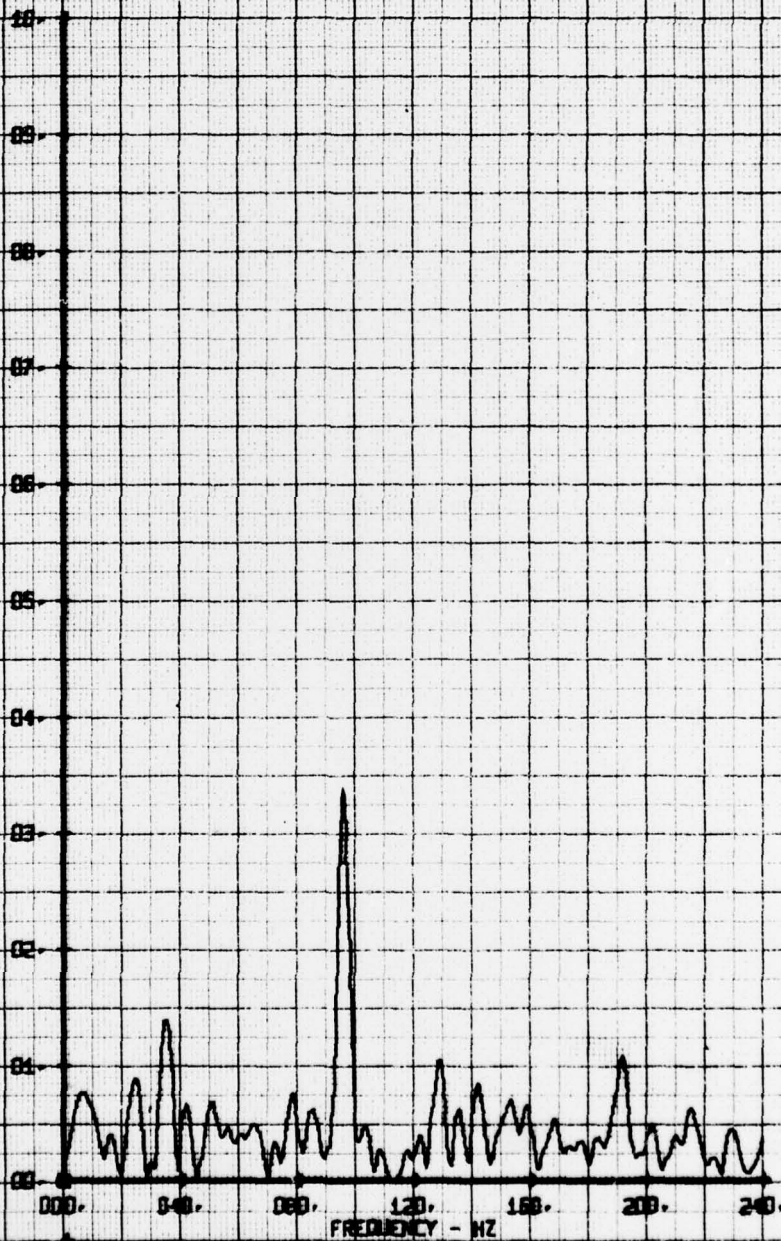
LEGEND
CH 65
PARAMETER
BETA



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ATW ECT. STIMULATED DUCT 150PSI
RUN 205 TP 4

LEGEND
CH PARAMETER
85 BETA

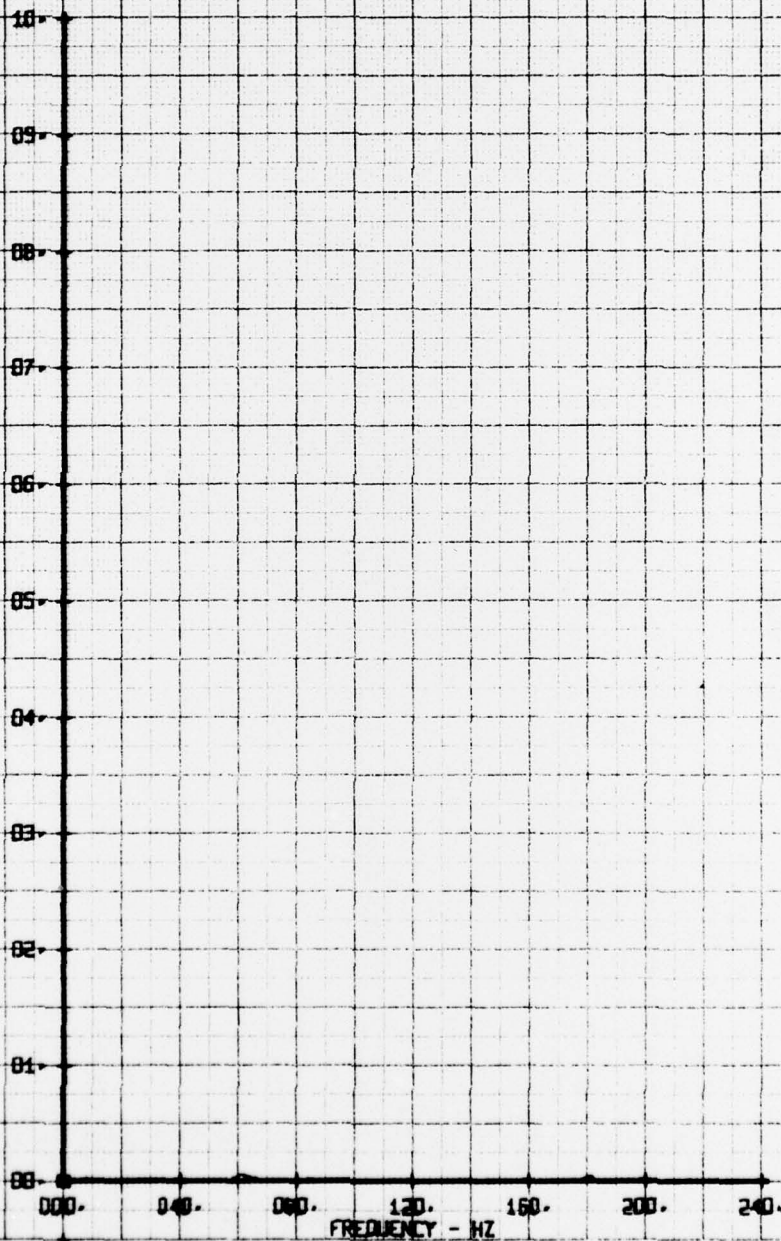
LATERAL FLOW ANGLE, BETA - DEGREES



HOT FILM WAKE FREQUENCY ANALYSTS
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RUN 205 TP 1

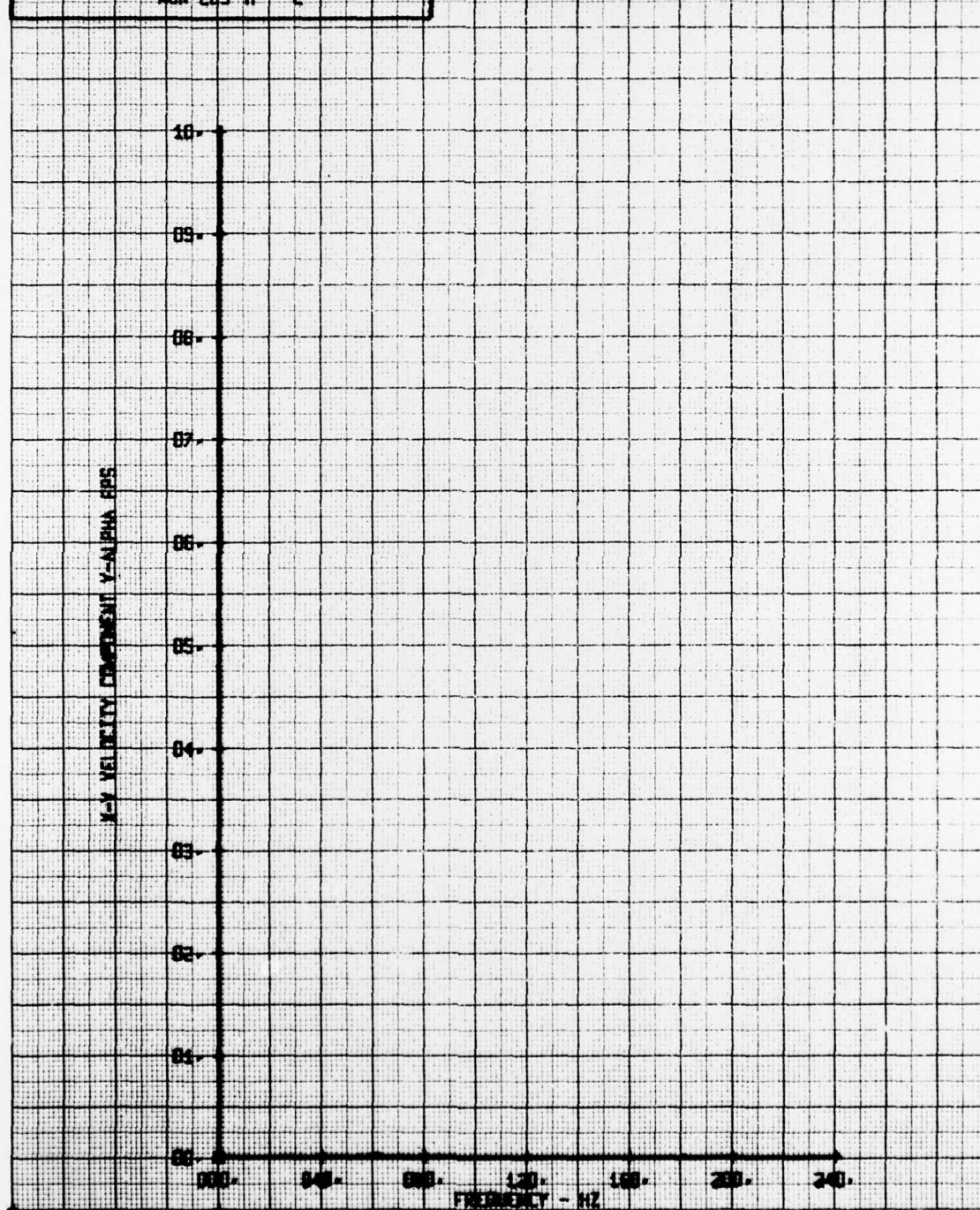
LEGEND
CH PARAMETER
66 V-ALPHA

X-Y VELOCITY COMPONENT Y-ALPHA EPS



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AIR FLOW, BIFURCATED DUCT 150PSI
RUN 205 TP 2

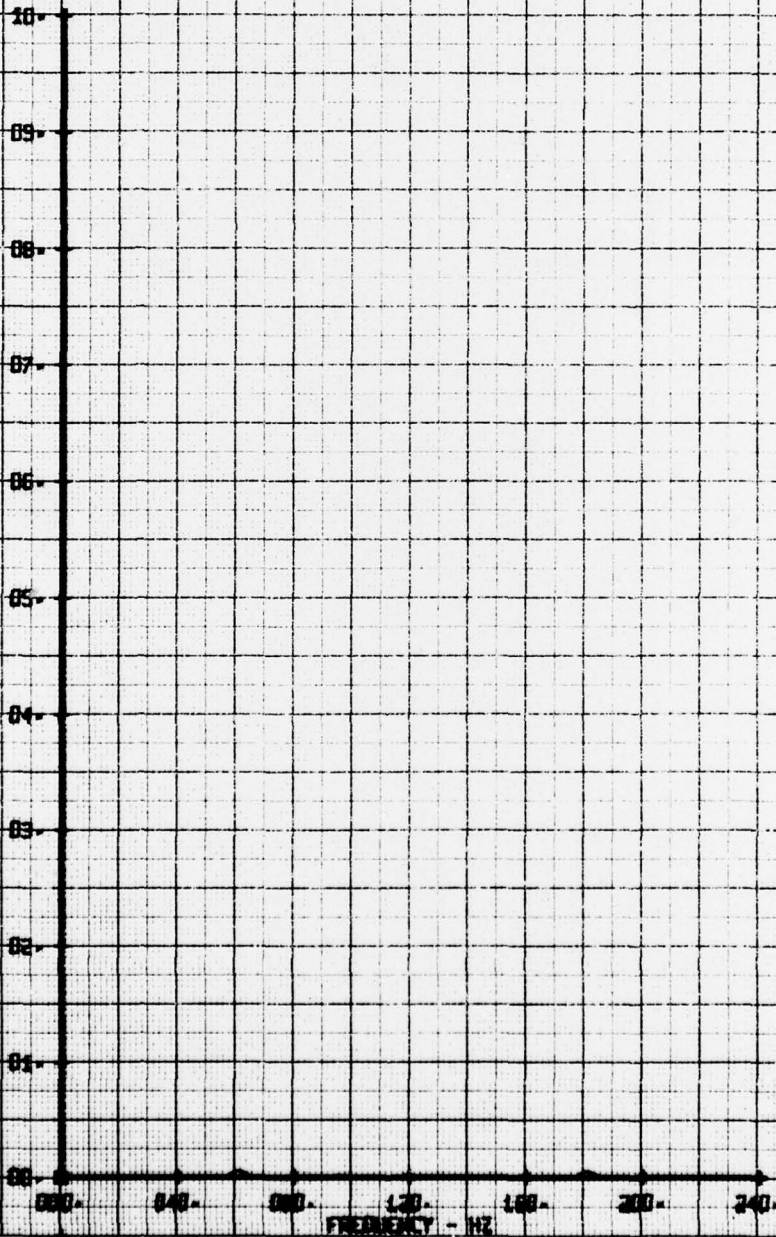
LEGEND
CH 66
PARAMETER
V-ALPHA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EJECT. BIFURCATED DUCT 150PSI
RUN 205 TP 3

LEGEND
CH 66
PARAMETER
V-ALPHA

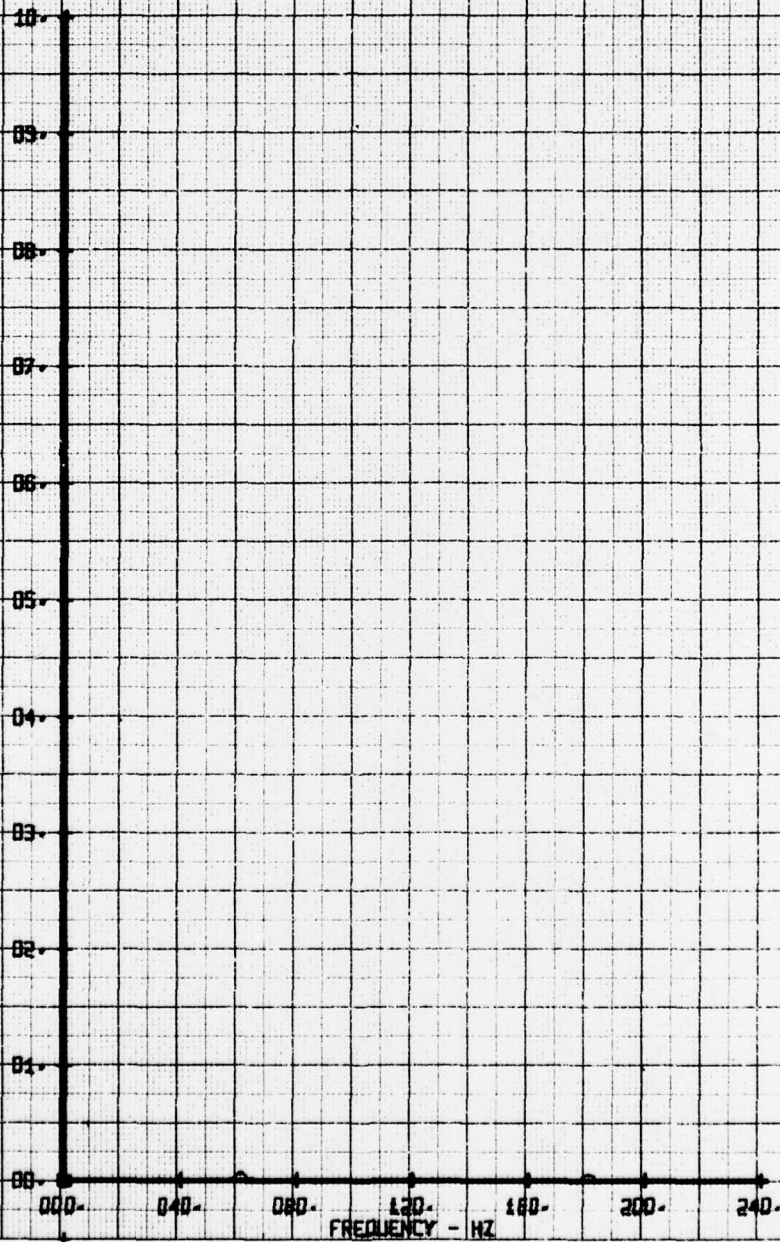
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HOT FILM WIRE FREQUENCY ANALYSIS
AIR F.WT. REFURCATED WRT 150PSI
RUN 205 TP 4

LEGEND
CH PARAMETER
66 V-ALPHA

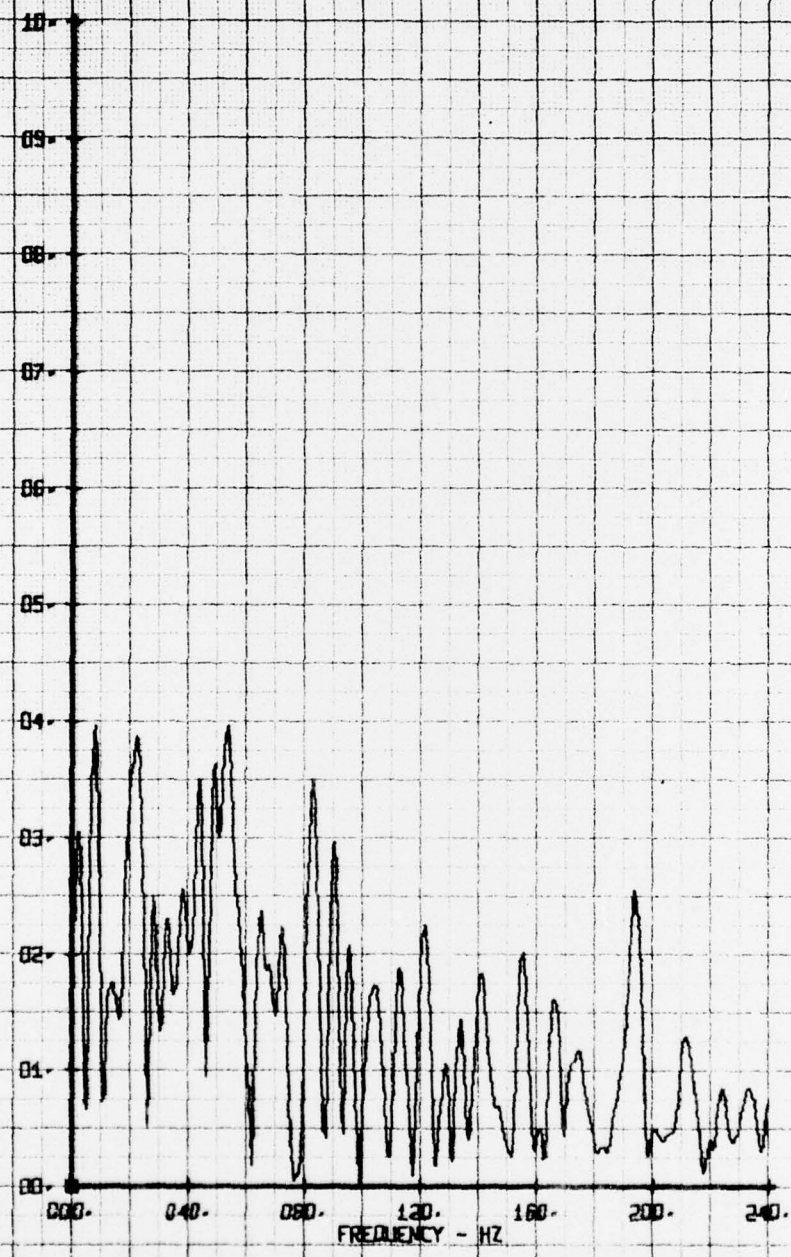
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HOT FILM WAKE FREQUENCY ANALYSIS
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LEGEND
CH 65
PARAMETER
V-BETA

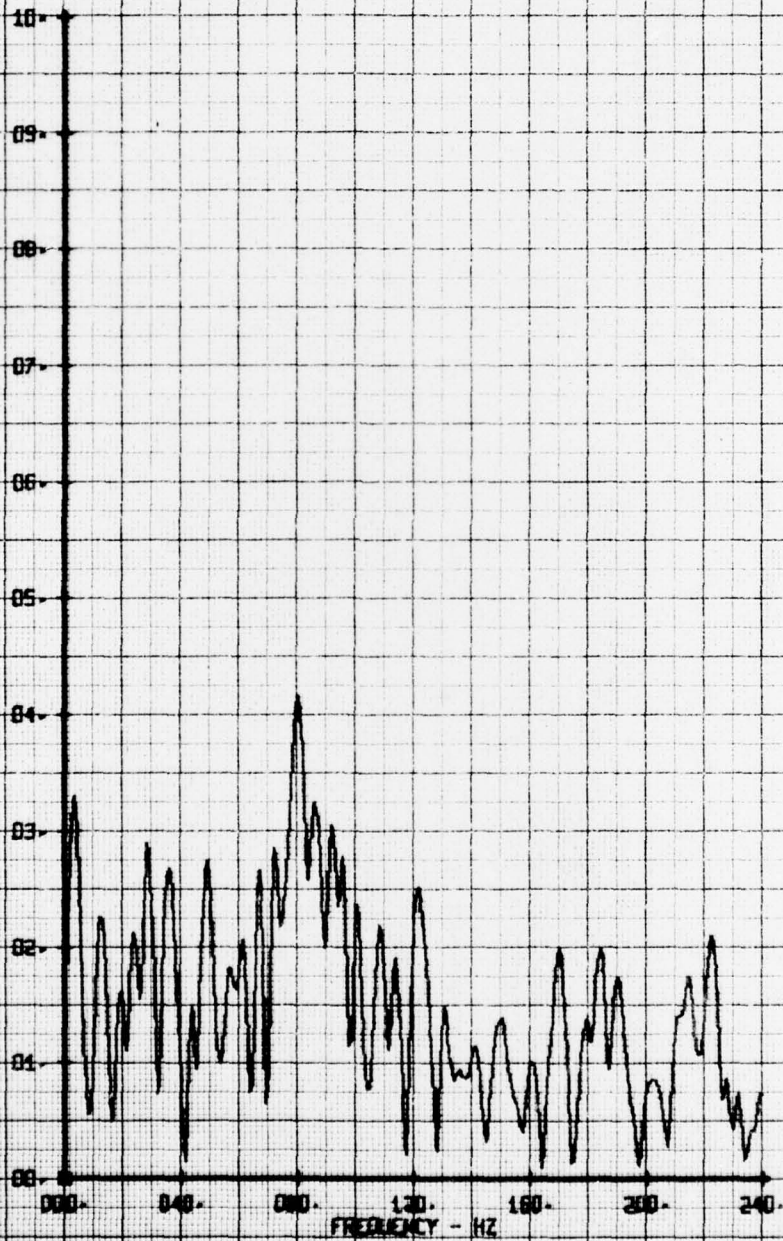
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HOT FILM WAKE FREQUENCY ANALYSIS
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RUN 205 TP 2

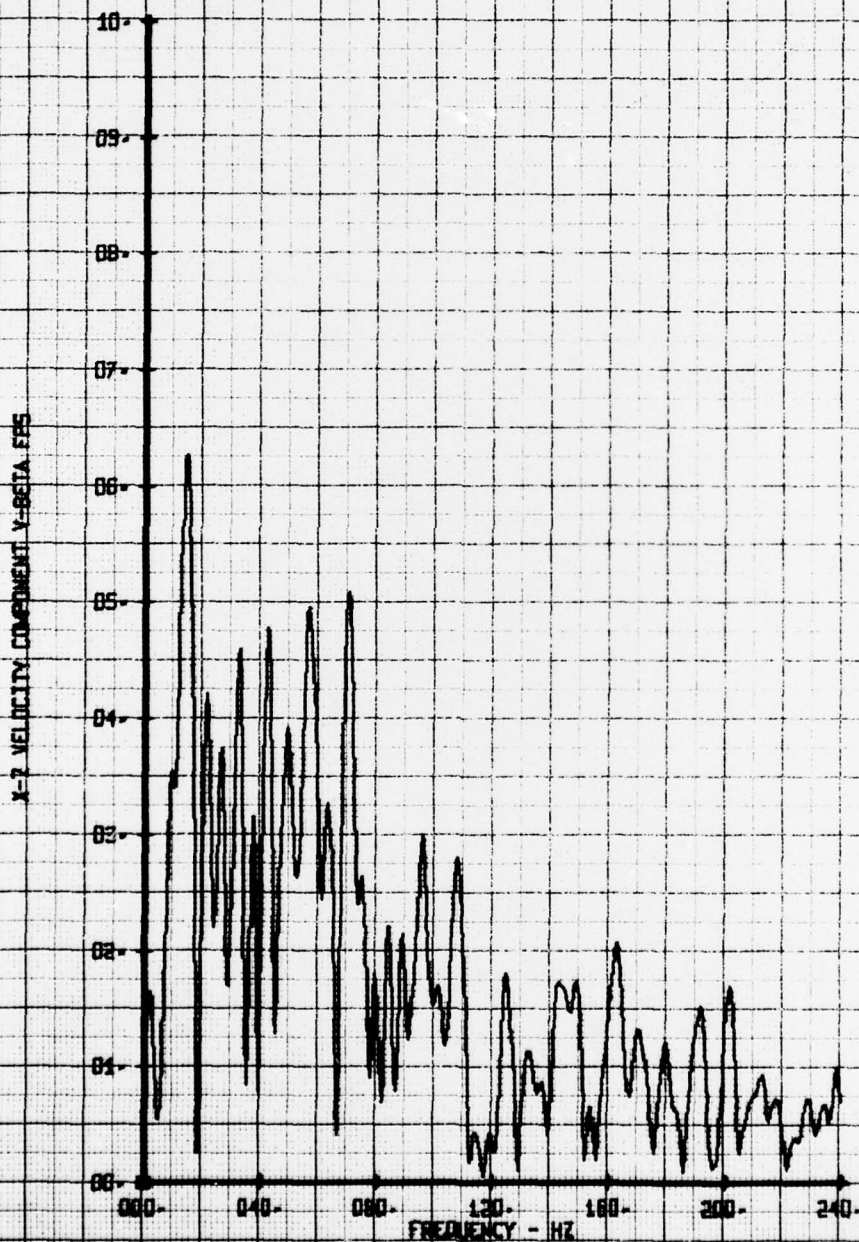
LEGEND
CH 65 PARAMETER
V-BETA

X-2 VELOCITY COMPONENT V-BETA FRS



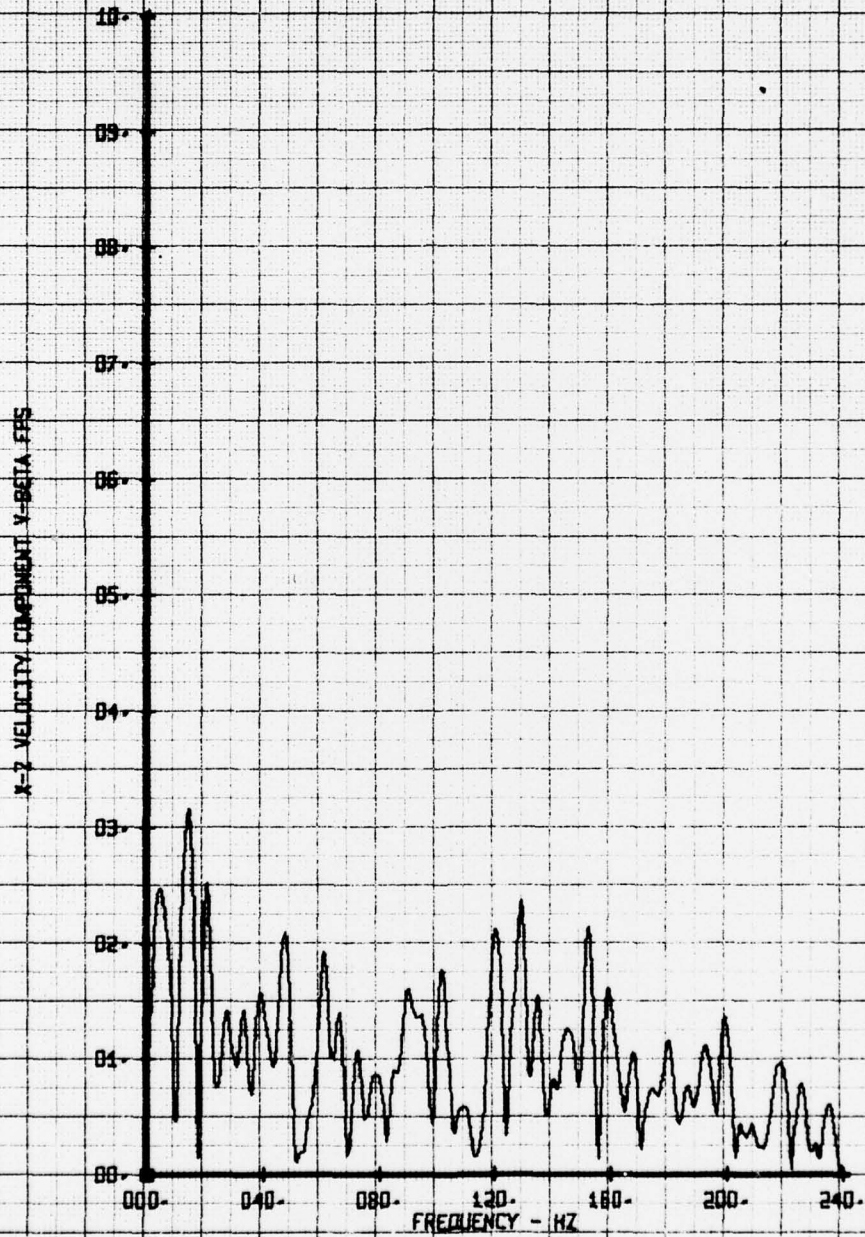
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ATR EJECT. BIFURCATED DUCT 150PST
RUN 205 TP 3

LEGEND
CH 65
PARAMETER
V-BETA



HOT FILM WAKE FREQUENCY ANALYSIS
AIR EXIT, BIFURCATED DUCT 150PSI
RUN 205 TP 4

LEGEND
CH PARAMETER
BS Y-BETA



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